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Am I Blue? Inside the Spiffy New Power Mac G3 ____ 24
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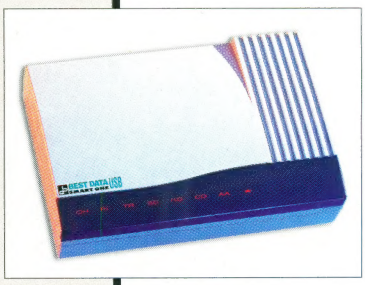

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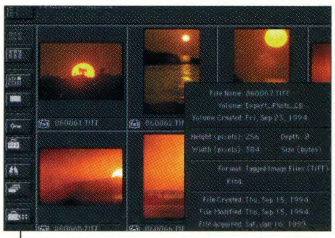

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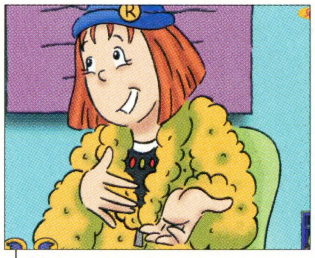

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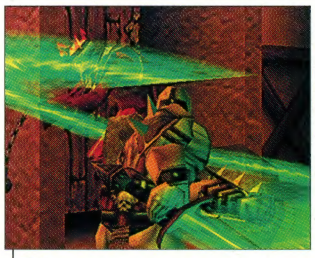

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- 4 apples — Paint and Play Pony
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Our Rating System

- 5 apples — **Mac-nificent.** You gotta get it. No flaws.
- 4 apples — **Excellent.** Recommended even if it has a minor flaw or two.
- 3 apples — **Average.** Despite problems, still a worthwhile product.
- 2 apples — **Below Average.** Has serious flaws that limit its usefulness or fun.
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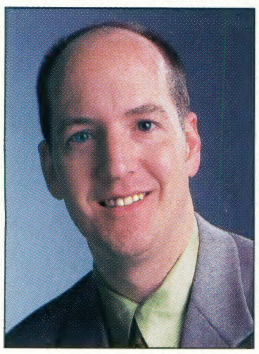
from the chief [Editorial]

Scotty, We Need More Power!

About once a month, we get a letter imploring us not to forget owners of older, slower Macintosh models. "Hey, down here, with the pizza-box Mac! We are not being served by your glazed-eye devotion to the almighty G3 processor!"

Everyone on the *MacHome* editorial staff owns an older Macintosh, or two or three. Mr. Weiss is the proud owner of a Power Mac 6100 (yes, a pizza box). Ms. Feld drives a three-year-old Power Mac 7500. And Mr. Poultney owns a 6100, a Quadra 800, a IIci, and a Mac 128 he picked up at a thrift store for $25. He even burns CD-ROMs on the IIci. Obviously, Mr. Poultney likes to wring the most out of his purchases; he's a big coupon clipper, too. OK, maybe not that last part.



I own a Power Mac 7500, too. But three years ago, I paid a little extra to get a Mac that accepts processor upgrades. My reward: This Old Mac now sports a 400MHz G3 processor — at least until the manufacturer breaks down my door and pries it out of my machine. I've been accumulating a juvenile, embarrassing amount of RAM over the years, too. No, I don't need 184MB of RAM. But you know, I never run out, and I never have to slink over to my neighbor's house to borrow some.

For our main tasks — word processing, e-mail, and Web browsing — most of these Macs do just fine (no, not John's thrift-store Mac). But on some occasions, even G3s don't cut it. Here's an example: Recently I was trying to create a full-page, 300dpi background image in Adobe Photoshop. I'm no expert; I have little artistic ability, so I'm really just a hacker. But I copied and pasted several images into the 30MB master image, repeating the process several times, and I experimented with multiple filters. For one filter, I hit OK, then walked away. Half an hour later, the filter was finished — and I didn't like the result. Half an hour, down the drain.

Most people, including me, don't deal with such images on a regular basis, unless we work in an art department. But that's not to say we don't want to, or wouldn't play around with them if our computers could manipulate them in a timely manner. My point is this: If our computers were fast enough, we'd be creating 2400dpi images, or even higher, because they look better. However, we also need bigger hard drives to hold those images. We need faster printers with which to print them. And we need much, much faster methods of transferring files over the Internet so we can share them.

It's not enough that Macintoshes bring word processing and e-mail to the people; they should bring Photoshop to the people, too. Yeah, yeah, I hear you. You don't use Photoshop or any other such demanding applications. But wouldn't you if you could? If Adobe were handing out free copies at Macworld Expo?

It's true that we here use our Macintoshes all day long because we're working like blue beagles to bring you *MacHome* every month, so perhaps we're a bit jaded. But before you say we get our Macs for free, hey, we don't. That's why Mr. Poultney is burning CDs on a IIci.

We cover the newest, fastest, bluest Macs on the planet, because they are what people drool over. When they're shopping for a new computer, they want to know what's best. If you saw a picture on our cover of a mint-condition Performa 475, would you get excited? Put another way, do you read *Road & Track* for coverage of 1979 Cutlass Supremes? I didn't think so.

Please know that we will continue to address topics that affect older machines; we're not leaving them behind. However, we must devote some time to newer machines, including G3s. Macs have been around for 20 years, and Apple has made many different machines of widely disparate capabilities. It's difficult to make every article apply to every machine.

And jeez, we don't have all day to get them done. Could you imagine applying that filter on a IIci? You can't make me do it. I won't, I won't, I won't. *No.*

Alan Stafford

Alan Stafford
Editor in chief

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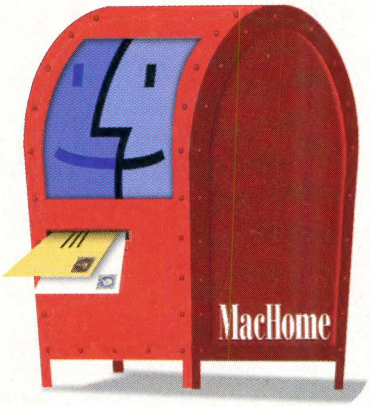
Write On [Your Letters]



Baa-aaa

Five years ago I purchased a Performa from a local distributor, and bundled with the system was a year's subscription to *MacHome*. After two years I let the subscription end; however, just recently, I've started up a new subscription. I forgot how informative your magazine articles were. Your review of Real Software's Real Basic in the December issue hit home! I was able to download a demo from the Website that your magazine noted in the review. Thank you for such a great series of articles, reviews, and tips; I truly enjoy them. Here's one sheep that strayed from the flock but is safely back amongst the fold.

Chaz Bicoy

Mama's Got a Switchbox

Your Back to Basics section nearly always has some useful tidbit for me, even though I consider myself a knowledgeable Mac user. Back in July I didn't need to know about switchboxes and their special cable needs. But last week, when I bought a new laser printer (an NEC Superscript 870, which is terrific), I wanted to be able to use it interchangeably with my Epson color printer. I pulled out an old switchbox that I used years ago, dug out some serial cables, and hooked it up to my Power Mac 6500. I couldn't imagine why it didn't work until I fell upon your July issue: I was using the wrong interface cable. A mere $9.95 later I had hooked the computer to the switchbox with a new microcomputer interface cable and I was in business. Thank you!

Frances Snedeker

Buy Bonds for the iMac Effort

I must respond to a letter in your January issue from Curt Guenther. I believe that Mr. Guenther has missed the point of the iMac, which is to introduce people like myself to the world of computing. I'm the techno-peasant poster boy, and the looks-nice/easy-to-use package the iMac represents is perfect for me. I use that mouse every day and it's great!

So I disagree that Apple has "blown" this opportunity. But now that Apple has me hooked, they better make sure that they have the move-up machine I'm going to be looking for in a few years' time.

Nick Roberts

Up-to-Date

In Write On in the February 1999 issue you mentioned Apple's Up-to-Date program but did not give an address. Could I trouble you for that?

✍ *Sure: www.apple.com/macos/up-to-date.*

G3 Game Gear

Your magazine had the most concise information about Mac OS X [August 1998]. I hope you will continue your great coverage on the announcements at the recent Macworld Expo in San Francisco. I am especially interested in OpenGL, Rage 128, and what it means for 3D games on the Mac. We now have John Carmack's (co-founder of Id Software) support. (I was all set to buy a PC just to play *Quake II*). Bravo Steve!

Tom Gaglione

Game Boy

Why doesn't Apple include, say, a Nintendo 64 with future iMac models (with the unit inside the iMac's case)? I'm sure Apple could make some kind of deal with Nintendo; this would solve the gaming problems that Mac users face and would entice thousands of teens to want an iMac. Wintel machines would then be losing the gaming battle, and users would still have the option of buying "computer games." They could even include a USB controller.

Daniel Hayman

✍ *It's not Nintendo, but you may be interested in Connectix's Virtual Game Station. See the review on page 56.*

A Fast Bit

I was reading your article on ADSL and thought you'd be interested in the new ADSL service being offered in Ontario and Quebec in Canada. Bell Canada is offering an ADSL service in Canada at $39.95 CDN per month! Check out the URL: www.hse.sympatico.ca/adsl.html.

Bruce Henderson

Tell It Like It Is

In regard to the editor's letter in the January 1999 issue: Any reader who has any complaints about any negative opinions regarding *MacHome*'s coverage of Apple is obviously confused about the purpose of your magazine. I believe most readers understand that your goal is to better educate new or intermediate users of Macs on how to better use the machines and all of the relevant information that goes along with that (news, reviews, features, etc.). You do an excellent job of cutting through the clutter and writing in a clear, concise style. Your integrity is without question, and in the few features that you do devoutly defend the Mac, you do so with a wink and point that out. As you should.

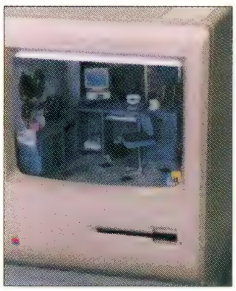
You are not a trade or hard news magazine. But you've never shied away from pointing out Apple's (or a Mac's) shortcomings, and as you stated, it's not your goal to bash Apple or drive users away to another format.

Anyway, you have nothing to worry about. You tell it like it is, but without the need to go all kludgy because 1997

was a bad year. Keep up the great work; it is appreciated by the mass of us.

KC

What Can You Do with a 68K Mac?



While cleaning up my office, I found a couple snapshots of one of the entries in the 1998 Iowa State Fair doll house competition (in Des Moines, Iowa). Pretty cute, huh?

Judy Sutcliff

Change the Script

Although this is a letter regarding a correction, first I would like to say thank you for publishing such an incredible magazine. I look forward to getting each new edition and cannot be seen without it for a week when it arrives. I read it from cover to cover, sometimes twice. Thanks again!

The correction I mentioned is the Internet address for the AppleScript overview on page 29 in the January issue. The correct address is www.apple.com/applescript/overview/index.html.

Gregory A. Buys

Peeeew!

I have a serious complaint about *MacHome*. It stinks. Don't get me wrong! I think the *content* is great, but in the past few months, you have switched to different paper and/or inks that stink. The odor is so obnoxious that I have to read the magazine at arm's length and then store it far away from my nose. I realize you are probably trying to save production costs or use recycled paper or environmentally friendly inks, but please locate someone on your staff with a decent sense of smell and try to find materials that don't compromise nasal comfort.

Joanne Auth

Guess we can't say, "he who smelt it dealt it" in this case; we've noticed the olfactory offense, too. However, we just switched to a new printer, so our aroma should improve with the new issues.

Corrections

In the January issue, we mistakenly dubbed Boca Research's GlobalFax software as being version 1.04; it's actually version 2.6.5. Now you know.

In the February issue, we didn't attribute an image: In the Avid Cinema review, the image that was being edited in the screenshot was created by Tom Winkler.

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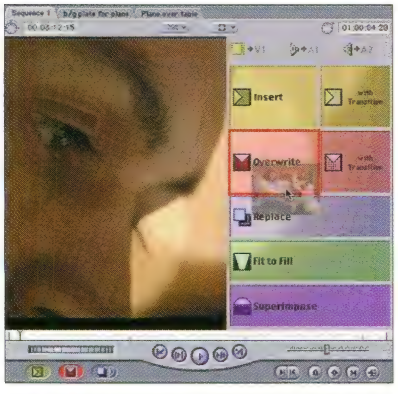
By John Poultney

More Pro Apps Coming for Video, Publishing

Apple, Adobe Stir the Software Pot

Ah, spring. When Mac users' thoughts turn to new software. And wouldn't you know it, a couple of really cool applications are slated to hit the streets this spring from Apple and Adobe, aimed at the desktop video and publishing markets.

Apple is readying Final Cut Pro, a digital video production, compositing, and editing package for G3 Macs. The program will support FireWire and DV (digital video) standards for pro-style video, and will have complete non-linear editing, keyframe animation, and special effects controls, says Apple. Additionally, it will support unlimited layers, mattes, and precise numeric curves for keyframe motion and acceleration paths.



For you credits-watchers — you know who you are — Final Cut Pro will have extensive text-generation functions, including automatic leading, tracking, and kerning for any font. Text and graphics objects can be transmogrified with Final Cut's gradient generator, which can create lots of spacy patterns, pretty colors, and shiny objects to keep your attention.

And in order to keep track of the many, many files that go into any serious digital video project, the program will sport extensive media-management features so files can be sifted, sorted, and most importantly, found when needed. No less than 34 variables will be provided for each file, including type, location, audio quality, and edit marks.

With such a potent program in the wings, it looks like Adobe's venerable Premiere, long the standard for Mac video work, will have some serious competition. Action!

Adobe's Latest

Not to be outdone, Adobe is whipping up some Spring Fever with InDesign, which is rumored to be a fearsome "Quark-killer" stalking the untamed wilds of the desktop publishing (DTP) kingdom.

InDesign is being written from the ground up, so it won't replace PageMaker, Adobe's longtime DTP wonder child. That program will live on for the midrange business crowd, while InDesign will be marketed to design professionals. At several high-visibility conferences last year, Adobe cited InDesign, then known by its code name of K2, as solid evidence of its commitment to the Mac market.

The package will be object-oriented, encompassing a small core interface enabled by various plug-ins for specific functions. With this construction, third-party developers will be able to create custom functions easily for InDesign, Adobe said.

InDesign will ship this Summer for approximately $700.

Once is Not Enough

ixMicro says: Why be satisfied with one monitor when you can have two, running in the Mac's fabulous extended desktop mode? Well, not in those words exactly, but that's what it's getting at with a new PCI card.

ixMicro calls it the ix3D Dual Monitor, though it's essentially the same thing as the ix3D Ultimate Rez, discussed in these pages back in the November issue. Except now it can support two monitors — a task that normally requires an additional card. Says ixMicro spokeswoman Jill Cook, "The Dual Monitor card is designed for all types of users, but especially those using graphics programs who want to keep their tools palettes on one screen and the artwork on another."

The $499 ix3D Dual Monitor can provide up to 1920 x 1080 pixel resolutions on the primary monitor and 800 x 600 pixels on the second. It's based on the same ixMicro TwinTurbo 128 3D chip of the original Ultimate Rez.

ixMicro, 888-467-8282
www.ixmicro.com

Minimalist Mail

Mainstay has an answer for those users who walk the earth, going from one computer to the next wishing there was an easy way to retrieve their e-mail.

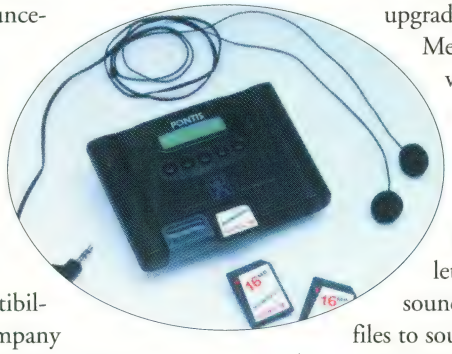
The company's recently released JustMail is a Java applet that users upload but once to their ISP account. From then on, users can get their mail from any computer with a Web connection. The applet costs $40; an unlimited single-site license is $495.

Mainstay, 805-484-9400
www.mstay.com

Facing the Music

It soothes the savage beast, it gets you in the mood, it's the food of love. Mmmmm. Music can't be bad, can it? We think not. It is with great excitement that we note several cool new music-related items for your perusal.

• You probably know that the MP3 audio compression format has all the kids talking and that it's the wave of the future, vis-a-vis sending high-quality music files o'er the Internet. And you may also know that Diamond Multimedia's announcement last year of a small, portable MP3 player, the Diamond Rio, left us Mac users feeling, well, abandoned, as there was no mention of Mac compatibility. Well, now a company called Pontis is hearing our pleas, as its brand-new MPlayer3 is available with Mac software. This is a critical component, as it lets you transfer the MP3 files you've downloaded to your computer onto the MPlayer3 itself.



As for the player, it's a nicely styled little number that sells for a mere $159. It lets you walk around with headphones and dance around like that guy in *Footloose*. The files are stored on stamp-sized flash memory cards such as those from SanDisk, a supplier of memory cards for cameras and other portable devices. The player has two slots for the cards; SanDisk and Pontis say that within half a year, capacities will allow storage of more than an hour of sound on the device (MP3 files typically take about 1MB per minute).

Pontis, based in Europe, is selling the MPlayer3 over the Internet; no word yet on a North American distribution arrangement.

• Brian Eno Fans rejoice! SSEYO has released a Mac version of its Koan music plug-in for the Navigator, Communicator, and Internet Explorer browsers. Koan creates "generative music," which means that it makes its own sounds on the fly, providing a streaming audio solution for your Web site. Much of the music created has a shimmering, surreal quality, like that of the aforementioned composer or perhaps the inexplicable Philip Glass.

Aside from making its own sounds, Koan also works with standard MIDI and WAV files to provide a rich, thick musical experience for Web surfers and creators alike. And it's free!

• Arboretum Systems has upgraded its intriguing MetaSynth program to version 2.5, adding copious new processes to the visual sound-creation software. MetaSynth literally lets you "paint" with sound, or convert graphics files to sound. The new version includes a wave-shaping tool for remapping waveforms, master tuning functions along with tuning tables and support for custom scales, new effect types via "displacement mapping," instruments support for stereo multisamples, and additional filter processes. Upgrades are $50; the regular price is $299.

Pontis MPlayer3, www.mplayer3.com
SSEYO, www.sseyo.com
Arboretum Systems, 800-700-7390
www.arboretum.com

Word Imperfect

Corel's hot-air balloon logo seems quite apropos these days, because everything seems to be up in the air with the Mac version of WordPerfect.

A recent *L.A. Times* article — saying that Corel is preparing to roll out Mac, Windows, and Linux versions of WordPerfect 2000 — may have been full of hot air. As of press time, the company said it has not decided whether it will continue developing the venerable word-processing package for the Mac, or kill it.

"There seems to have been some miscommunication recently in regards to our WordPerfect Mac plans," said Corel spokeswoman Susan Gauthier. "We will be making an announcement in the first quarter, but we haven't definitely said that WordPerfect 2000 will be coming out on the Mac."

Too bad, because if Corel's preview of the suite is any indication, the product could bring some much-needed competition to the business software market that's currently dominated by Microsoft Office. The Windows version Corel displayed at the Showcase Expo, a San Diego exposition, includes Corel's WordPerfect 9 word processor, as well as spreadsheet, presentation, database, Web-authoring, and speech-recognition software.

WordPerfect for the Mac, now at version 3.5, was last updated in late 1997.

SyQuest's Reversal of Fortune

How the mighty have fallen. Removable storage stalwart SyQuest, which you'll recall filed for bankruptcy protection a few months back, is selling off most of its corporeal being to archnemesis Iomega.

Iomega said that it will purchase "select assets" of SyQuest, including intellectual property, inventory, and fixed assets, for $9.5 million.

Makes you wonder what's left. Well, SyQuest doesn't seem to be answering the phones, so they were probably taken by Iomega. But the companies say SyQuests' liabilities and warranty service will remain the responsibility of SyQuest (SyQuest has announced continuing tech support via the Web).

In a statement, Iomega CEO Jodie Glore said SyQuest's assets were determined to add value to Iomega's business, and that "this [purchase] will be a worthwhile investment and will enhance our future products."

Pump Up the Volume, Mac

The Mac's sound capabilities have always been impressive, but in recent years, some features, such as surround-sound, have lagged on the platform compared to the Wintel world.

But Apple has taken steps to rectify this situation by licensing various audio software technologies from Spatializer Audio Laboratories. Apple has announced that it will integrate them into future iMac, PowerBook, and Power Mac products beginning later this year.

Spatializer showed off its latest software at the Consumer Electronics Show in Las Vegas; the company's technologies are in use by many audio companies including Proton, Toshiba, and Panasonic.

Here's a quick rundown on what Apple licensed:

- **3-D Stereo**, a way of expanding stereo sound input to simulate a 3-D sound experience using only two speakers.
- **N-2-2**, a method of re-creating multichannel surround-sound, normally requiring five or more speakers, from two.
- **enCompass**, an audio-positioning technology for determining the apparent locations of multiple sound sources over wide 3-D spaces, such as might be experienced in games and multimedia software.
- **ViB.E.**, a bass-enhancement technology for a true, uh, *boomin' system.*

I Demand an Explanation

Who among us has not scratched his or her head now and again, trying in vain to figure out what's meant by, "The application has unexpectedly quit because an error of Type 124 occurred"?

You might do well to check out Bleu Rose's $34 Black & Bleu, which tells you what "all the common and most of the obscure" Mac OS error codes really mean. Not only that, but it explains the answers in two categories: one for the naif, and one for the programmer. Interestingly, the program reports that a Type 11 error is actually a catch-all for several different errors — a shortcut for the programmers. If the program's database doesn't reveal an error, you can get an e-mailed explanation.

Bleu Rose, www.bleurose.com

Host of Cool Effects Grace Newest TypeStyler

Strider Software has released version 3.0 of TypeStyler, its mind-bending tool of hallucinatory text manipulation. The $295 package lets you tweak text nine ways from Sunday.

Version 3.0 includes a passel of new effect types you can apply to any text or graphics object; the software works with Illustrator, Photoshop, EPS, JPEG, PICT, and GIF file types and can import all of these through drag and drop.

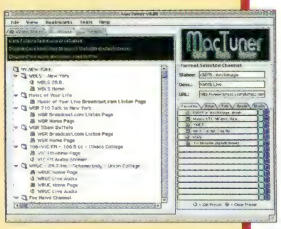
New effects include embossing, glows, bevels, soft shadows, blurs, and animated text. Strider said the software lets you create thousands of fades, shadows, patterns, and starbursts in various graphics programs.

Strider Software, 906-863-7798, www.typestyler.com

Tune In, Turn On

The proliferation of Web-based radio stations can be ignored no longer. Not with cool programs like MacTuner cropping up.

MacTuner, a $23 Java applet from Trexar Technologies, provides a centralized location for over 1,500 Web radio stations, supports both RealAudio and RealVideo file types, and has a world map that you can click on to listen to programming from a specific location. You can also find stations with an integrated search engine, or choose from lists of talk radio, news, and music stations. The program's database includes regular Internet presentations as well as standard radio programs that are converted to streaming audio.



Trexar says it is continually updating MacTuner's station list as new stations come online; a mechanism also exists on its Web site for users to add new or updated stations.

MacTuner, www.mactuner.com

Present Shock

Macromedia continues to, uh, *shock* Web surfers, this time with ShockWave 7, the latest version of its utility for playing streaming content authored in Director.

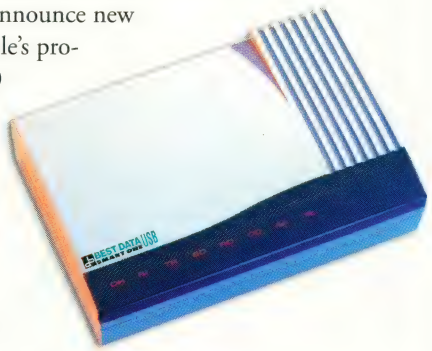
ShockWave 7 is the player that never needs updating ... because it is capable of automatically updating itself. Aside from the science-fiction aspects of this capability, Macromedia says it will improve the user experience and provide smoother downloads.

The player is free and available for download from Macromedia's Website.

Macromedia, 800-457-1774
www.macromedia.com

USB, G3 Modems From Best Data, Global Village

Macs and modems go together like baseball and a warm summer day. The communications options for Apple's newest G3 machines are expanding, dividing like amoebas even, as modem meisters Best Data and Global Village (a.k.a. Boca Research) both announce new devices. Previously, the only option was Apple's proprietary internal modem, available as a $100 accessory from the Apple online store (www.store.apple.com).



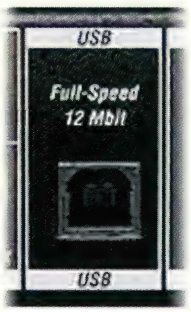
Best Data's best effort is the SmartOne USB modem, an external design that supports both the V.90 and 56Kflex standards for 56Kbps connectivity, as well as the V.80 standard for videoconferencing use. The SmartOne USB lists for $99.

Global Village, meanwhile, is offering an internal 56Kbps modem called the Teleport Internal 56K. The $139 modem, which fits into the blue G3's dedicated modem slot, has flash ROMs for future upgradability. Global Village is bundling its GlobalFax software with the modem, which supports faxing at up to 14.4Kbps. Astute readers will recall that Global Village won *MacHome*'s prestigious Reader's Choice Award for best modem manufacturer.

Best Data, 818-773-9600, www.bestdata.com
Global Village, 800-336-2009, www.globalvillage.com

More Music N' MIDI

Mark of the Unicorn (MOTU), a longtime Mac developer of MIDI and digital audio hardware and software, is working on USB updates for its extensive product line, encompassing everything from simple MIDI interfaces, A/V hardware suitable for professional media production, and music software.



The company hasn't released specific shipping, pricing, or product details just yet, but MOTU engineer Glenn Hughes says things are progressing briskly with the necessary software development, despite what he described as a "few rough spots" in Apple's USB development kit. Hughes said the new G3's sheer power makes it great for music. "We were tinkering with one and were able to record 72 simultaneous audio channels and play back 96 simultaneous tracks," he said. "With a Power Mac 7100, you're lucky if you can muster eight channels."

Musical hardware and software manufacturer Opcode, which is adding USB support to its widespread OMS system extension, has unvieled several new MIDI and audio products that are sure to please. We'd mentioned the DATport, a two-channel digital audio interface, in the December issue. Opcode's priced the unit at $250, and has added a model with an analog audio converter, as well as one with an optical interface for digital input, both of which are priced at $300.

Opcode also announced 32-, 64- and 128-channel MIDIport interfaces, and the STUDIOport, a combination MIDI and audio device. None of the units is yet priced.

Mark of the Unicorn, 617-576-2760, www.motu.com
Opcode, 650-429-2400, www.opcode.com

ISDN o'er USB

Suppose 56Kbps just isn't fast enough. Should this be the case for you, consider Hermstedt's ISDN connector for the iMac's USB port.

Slated to ship this summer for about $300, this translucent little beauty should catapult your connection speeds into the realm of the Gods, which was somewhere around 128Kbps when last we checked.

Hermstedt, 800-650-4736
www.hermstedt.com

He Ain't Heavy...

You can't hardly go to the movies these days without kids shining those annoying laser pointers at the screen. Lasers are everywhere these days, because the technology is mature and inexpensive, even if the kids aren't.

Need further proof? Witness Brother's new line of cheap, cheap "personal" laser printers. The HL-1040, for example, lists at only $300, and it can print 10 pages per minute at 600 x 600 dpi (dots per inch) resolution.

For a few dollars more ($100 more, to be exact), Brother offers the HL-1050, which prints at the same speed but at up to 1200 x 600 dpi. This machine has 4MB of internal RAM, which can be boosted up to 36MB with standard SIMMs (single inline memory modules).

The HL-1040 has a parallel port, while the HL-1050 has both parallel and USB options. However, as these machines are primarily designed for Windows systems, Mac users will need the correct adapters to use them. The kits, essentially adapters from InfoWave Wireless Messaging, cost $79 for the HL-1040 and $39 for the HL-1050.

The printers work with envelopes up to 9 x 12 inches, reports Brother.

Brother, 908-704-1700
www.brother.com

Digital Light and Magic

By David Weiss

Epson PhotoPC 750z

Olympus D-400 Zoom

Toshiba PDR-M1

Fuji MX500

Digital cameras are wondrous tools, and they're also wondrously expensive, costing more per pound than any other Mac peripheral. While they provide much coarser images than traditional film cameras, they offer the convenience and creative powers of all digital tools — immediate results, editing on the fly, and endlessly reusable media. We'd like to introduce you to the world of digital cameras; to do that, we review some of the latest and greatest digital cameras available today, with representatives from the $500, $800, and the near-$1,000 varieties.

But Do You Need a Digital Camera?

Put another way, what's wrong with a good 35mm and a decent scanner? How can you explain to your parents, spouse, or significant other that this $800 piece of equipment would not only make a really neato gift but is also a necessary addition to your already formidable arsenal of techno-gear? First of all, digital cameras are essential for those who require immediate photos. If you were covering an event for a story for the Web, you could

The World of Filmless Cameras

take a picture, sneak off to the corner, download the picture to your PowerBook, dial up your ISP via your wireless modem, and e-mail the picture to the Webmaster, all inside of about five minutes. If you're like me, and you like to dabble in illustration but have several limitations in the perspective department, digital cameras make excellent "cheating" tools — take a picture, bring it into your Mac, and use it as a template in a drawing program.

Digital cameras do have their weaknesses, of course. Aside from not being able to match their traditional counterparts in resolution and lens quality, they take their sweet time when you turn them on, and after you snap the Record button (the digital equivalent of the "shutter"), they need a moment to capture the information and recover before they're ready for the next shot. So you'll miss precious pictures if you bring it along to a soccer game.

You Say You Wanna Resolution

Rather than directing the light onto a piece of emulsion (film), digital cameras use a gizmo called a charge-coupled device (CCD), which translates light — both its intensity and its hue — into packages of digital information affectionately known as pixels. So the greater the pixel capacity of the CCD, the more information the photo will contain, or the higher the resolution. Many digital cameras, on both the low and high ends of the cost spectrum, boast mega-pixel CCDs, and their million pixels are capable of supporting images with resolutions as high as 1,280 pixels horizontally, and 1,024 pixels vertically.

Electric Film

When you take a digital picture, it gets stored on one of a number of different kinds of removable storage media, similar to floppy disks. With Sony's Digital Mavicas, the medium *is* floppy disks, the Mavicas being unique in this respect. But the two main kinds of digital camera storage media are SmartMedia and Compact Flash media. These little cards are expensive — to the tune of around $80 for an 8MB disk. All digital cameras ship with some kind of disk, but if you find yourself going out on long, extended photo-shoots, an extra one might be a worthwhile investment.

Getting your images from these kinds of media to your Mac can be a bit of a hassle, if only because you have to plug your camera into the Printer or Modem port (or any free serial port) on the back of your Mac. For this reason, card readers were designed. A card reader is a wee little drive that plugs permanently into a SCSI or USB port, and you can download data from the wee little cards to your computer through it. Another way to avoid the cable tangle is to use a floppy adapter, which lets you use a SmartMedia card in your floppy disk drive.

The Welterweights

Although there are some digital cameras out there that are less expensive, those in the $500 range offer a good place to start, because many of them have impressive features that invite comparisons with their pricier counterparts. In this range we find the Fuji MX500, the Olympus D-340R, the Ricoh RDC-4200, and the Toshiba PDR-M1. There are others, but they were unavailable for review (or we've reviewed them already).

Three of the cameras reviewed here have a fixed lens (no zoom), and an optical viewfinder as well as an LCD screen for composition. They all come with a 4MB SmartMedia card, capable of holding about 8 to 10 photos, (or about 50 in low-resolution mode,) but the Olympus graciously comes with a extra 4MB card. They all have built-in flashes. The Toshiba and Fuji are practically identical — in fact they most likely have sprung from the same mold. They sport 1.5-megapixel CCDs, and provide resolutions of up to 1,280 x 1,024. The Olympus D-340R has a 1.3-megapixel CCD, which can provide a resolution of 1,280 x 960. The D-340R, like the other Olympus cameras in this range, has a nifty feature — when you slide the lens cover open, it also turns on the camera. The Ricoh's CCD also has 1.3 million pixels, and provides a resolution of 1,280 x 960.

Olympus D-340R

Olympus D-620L

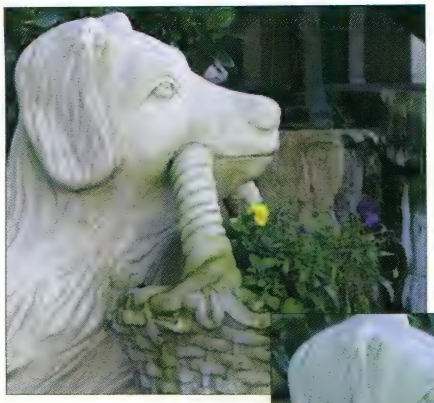
Ricoh RDC-4200

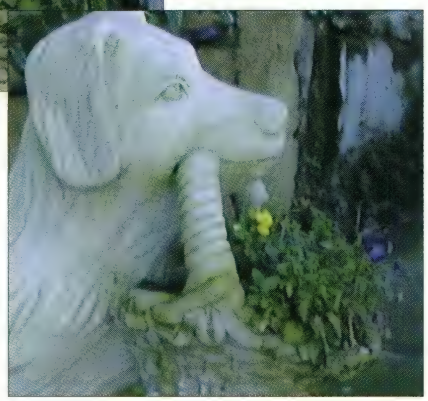
Sony Mavica MVC-FD81

Sony Mavica MVC-FD91

The Olympus D-340R can print directly to any Olympus printer, such as the P-330, the newer version of the P-300 small-format dye-sublimation printer we reviewed in December, 1998. All Olympus cameras have this ability.

Typical of this price range is the lack of an optical, as opposed to digital, zoom. An optical zoom is accomplished by phys-





Above: Photo taken by the Olympus D-620L. **At right,** the Fuji MX500. Look at the differences in detail, and the color of the dog.

ically moving the camera's lens, while a digital zoom merely magnifies the pixels that the camera records. An optical zoom is extremely valuable because it not only gives you higher-quality close-ups, it also gives you a more composition options. In this range, only the Ricoh RDC-4200 sports this feature; it's commendable that Ricoh was able to pack it into a camera that's only a tad bigger than a cell phone. It has a zoom factor of 3X, meaning you can make your subject three times closer than the default lens setting. The Ricoh's zoom operates with a grinding, stopping-and-starting kind of feel, however. The Toshiba PDR-M1 and the Fuji MX500 both have digital zooms with a factor of 2X, and although they don't hold a candle to the Ricoh's optical zoom, they're handy in a pinch for composing difficult shots.

In terms of camera controls, none of these are what I might call easy to use. On one occasion when I put a new SmartMedia card in the Olympus, I was greeted with a blinking arrow pointing to an icon of a page with a hammer on it. The camera was trying to tell me that the card needed formatting, but I had to rifle through the manual in order to learn this.

But in terms of driver software, the Olympus was the clear winner. It scours your camera for images and displays them as thumbnails, after which you can easily download the ones you want. The Ricoh provides a rough little black-and-white utility that uses only two buttons and provides only minimal feedback and no thumbnails. The Toshiba and Fuji both provide TWAIN acquire modules, which means that you can acquire the photos from within an image-editing program like Adobe Photoshop. This is limiting because, like the Ricoh driver, it doesn't provide you with any thumbnails, and you can only acquire one photo at a time. In addition, you can't delete photos from the camera using such a driver.

The Fuji, Toshiba, and Olympus each have adequate LCDs, but the one on the Ricoh is quite snowy and very dim. It washes out in direct sunlight, and subjects disappear in dim light.

But the Ricoh comes with the most niceties — an instructional videotape, an idea book, and a carrying case, but best of all, it comes with an AC adapter. All of these cameras are capable of being powered by AC, which greatly relieves the strain on your batteries while downloading pictures, but for all of these cameras, the Ricoh was the only one to provide one right in the box.

The Olympus D-340R delivered by far the most impressive photos of the four, with regard to color saturation, contrast, and detail. Next came the Ricoh, and though it captured roughly the same amount of detail as the Olympus, the Ricoh showed less color contrast, and had a tendency to overly amplify the green end of the color spectrum. The Fuji and Toshiba had nearly identical output, which was as expected. What was surprising was that although their CCDs boasts the highest number of pixels, they captured less detail than the Ricoh. In terms of color balance, as with the Ricoh, they showed less color accuracy, and a similar greenish tendency.

The Middleweights

In the $800 range, we tried out Epson's PhotoPC 750z, the Olympus D-400 Zoom, and the Sony Mavica MVC-FD81. What do you get for the extra $300? In terms of storage capacity, you get 8MB instead of 4MB, and in the case of the Mavica, you get a floppy disk drive. Floppies can only store 1.4MB, but they're also dirt-cheap, and downloading images is as easy as moving the floppy from the camera to your Mac. With each of these cameras, you also get a 3X optical zoom, and they're all much smoother and faster than the one in the Ricoh. Both the Epson and Olympus come with spot metering, which gives you precise control over your lighting measurements.

Resolution-wise, though, your $300 extra doesn't take you to a higher realm. The Epson and Olympus D-400 each have 1.3 million-pixel CCDs capable of providing 1,280 x 960 resolution, and with its 850,000-pixel CCD, the Mavica can support a standard resolution of 640 x 480, or a high-resolution at 1,024 x 768, but the colors drop down to 256 (from more 65,000) at that resolution.

The Epson's LCD has a door that can be flipped open for natural light. The effect is very subtle, and it works only with very specific angles of sun, but when you happen to be standing in the right place, opening this door can improve the LCD image and save your batteries a bit of strain. It also includes a case, but better yet, it includes four rechargeable batteries plus a battery charger, as does the Mavica.

Any Epson camera can print directly to most Epson printers. Sony also makes a small-format dye-sub printer, and the Mavicas can print directly to them.

In terms of driver software, the Mavica needs none because of its ability to handle floppy disks. The Epson driver is even easier to use than that of the Olympus, in that it involves fewer steps; merely running the application begins the process of finding and testing the camera connection and creating thumbnails. You don't even have to double-click on "My Camera" as you do in the Olympus driver.

Of the three, the Olympus D-400Z has the fastest and smoothest zoom, and it's accomplished by means of a thumb-friendly toggle switch.

The Mavica has many additional features that make it an all-around friendly device, such as the ability to manually

focus and adjust the brightness of the LCD. In addition to stills, you can also take small movie clips, and the quality is not too shabby. A three- or four-second movie with a relatively smooth frame rate takes up about 120K of disk space. The Mavica also has a microphone so you can add sound to your movies or voice annotations to your photos, and it comes with a rechargeable battery and charger. Like the Epson, it has a natural light window for the LCD. It also gives you the ability to add special effects on the fly, such as sepia tone for that old-fashioned look, and it has a bigger LCD, the better to see your subject with. And The Mavica's camera controls break with tradition by being actually sensible.

The Epson and the Olympus D-400 Zoom both took much better pictures than the Mavica MVC-F81, and the Epson came out a tad ahead of the Olympus in detail and color. The photos of the Mavica, in comparison, came out much rougher, with some edges showing a slight "staircase" effect, and colors showing much less contrast and range.

The Heavyweights

Moving into the upper reaches, the thousand-dollar-and-beyond digital cameras, we tested out the Sony Mavica MVC-FD91 and the Olympus D-620L.

Let's first look at how the Mavica grows for your extra $200. Well, if you like the possibilities that a 3X digital zoom affords you, how would you feel about a 14X? In addition to having all of the features of the FD81, it has a few to boot, such as a motion stabilizer to minimize blur, a spot meter, and an LCD that flips around so narcissistic folks can see themselves in the LCD when taking their own picture.

The main difference between the Olympus D-620L and its less-expensive sibling, the D-400 Zoom, is that the former comes with a much wider lens. Also, it's a single-lens reflex, so when you look through the viewfinder, you're actually seeing through the lens. It also goes up in resolution to a 1.4 million pixel CCD, capable of providing 1,280 x 1,024 resolution, and comes with a spot meter.

Between the Olympus 620L and the Mavica F91, the Olympus produced much better pictures. Again, this didn't come as a huge surpise, since the Mavica uses a CCD with a much lower resolution. The Olympus showed much better detail, color contrast, and saturation. In fact the Mavica MVC-FD91's photos looked only a tad sharper than those of the smaller Mavica, the MVC-FD81.

Go Forth and Shoot Something

If you don't need a zoom, the Olympus D-340R, whose pictures came close in quality to those of the pricier cameras, is clearly the best value. If you do need a zoom, pick up either the Epson 750z or the Olympus D-400 Zoom. Although the Olympus D-620L will provide you with better quality pictures, you might not want to leap over the thousand-dollar mark. And although the 14X zoom on the Mavica F91 is far superior than that of all of the other cameras reviewed here, your pictures just won't end up looking as good. But some might still prefer a Mavica; both models we reviewed here provide an impressive selection of effects and features. MH

Camera	Price	Maximum Resolution	CCD (# of pixels)	Picture Quality	Key Additions	Rating
Epson PhotoPC 750z 800-463-7766 www.epson.com	$799	1,280 x 960	1.3M	excellent	case, battery charger, 3X optical zoom	●●●●
Fuji MX500 800-755-3854 www.fujifilm.com	$499	1,280 x 1,024	1.5M	fair	digital zoom	●●½
Olympus D-340R 516-844-5000 www.olympus.com	$499	1,280 x 960	1.3M	very good	extra 4MB memory card	●●●●½
Olympus D-400 Zoom 516-844-5000 www.olympus.com	$799	1,280 x 960	1.3M	excellent	3X optical zoom	●●●●
Olympus D-620L 516-844-5000 www.olympus.com	$1,199	1,280 x 1,024	1.4M	excellent	spot meter, single-lens reflex	●●●●
Ricoh RDC-4200 702-352-1600 www.ricohcpg.com	$499	1,280 x 960	1.3M	good	3X optical zoom, case, AC adapter	●●●●
Sony Mavica MVC-FD81 www.sony.com 800-222-7669	$799	1,024 x 768	850K	fair	floppy drive, MPEG movies, effects	●●●
Sony Mavica MVC-FD91 www.sony.com 800-222-7669	$999	1,024 x 768	850K	fair	all of the above plus 14X zoom, image stabilizer	●●●
Toshiba PDR-M1 800-631-3811 www.toshiba.com	$495	1,280 x 1,024	1.5M	fair	digital zoom	●●½

To the 360th Degree

by Alan Stafford

Virtual reality — it's a popular technology catch phrase.

People use it without really knowing what it means. We often associate it with computer-generated environments in which we experience scenes and sounds that are surreal and super-realistic.

QuickTime VR, on the other hand, is a slightly different animal. Apple's technology for creating panoramic images and 3-D objects enhances real images to make viewing them seem as if you are actually there on the scene, or there to touch an object. Rather than creating views that you'd never see in real life, it creates views that you formerly could *only* see in real life.

Here, we'll explain what QuickTime VR is, what it's good for, and what you need to create VR images, as well as review the software you'll need.

Quick, What Does It Do?

A QuickTime VR panorama is an image that takes one of two forms: either a wide-

View from the top: San Francisco's Twin Peaks.

angle view that allows you to look from far right to far left, or a 360-degree view that allows you to spin around the scene with your mouse just as if you were spinning around on a bar stool. A QuickTime VR object is an on-screen object that you can manipulate with your mouse, allowing you to see all sides and perspectives of it. You can view both types on either a Mac or on a PC, and with a QuickTime plug-in, you can view them inside a browser window.

Besides being interesting and fun, QuickTime VRs can be functional. As objects, potential customers view products online, turn them this way and that, zoom in on features, and see specifications that are linked to those features. With panoramas, viewers can get a better feel for an environment without actually having to go there. Real estate is a popular use: People can look around a room, then click on hot spots to take them to more rooms. It's faster than visiting house after house, and sellers can reach more potential buyers.

With the release of QuickTime 3.0 last year and the advent of better compression methods, good-looking VRs can be as small as 200K, or less. That makes them attractive to people who want to download them from the Internet.

Create Your Own

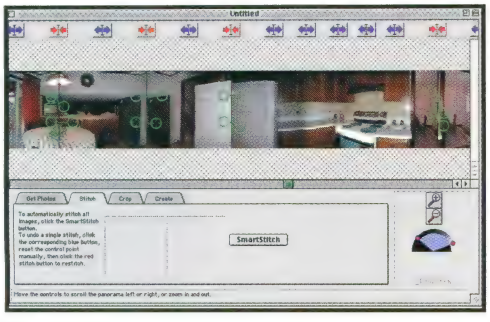
The nice thing about QuickTime VR is that you can create these panoramas and objects yourself — you don't need thousands of dollars worth of equipment to get started. Here's what you need.

First, a camera, of course. You can use either a digital camera or a traditional film camera. Because you'll be manipulating images with software, it's much easier to use a digital camera to import images directly to your computer. If you use a film camera, you'll have to scan numerous photos, and that's time consuming. However, digital cameras still don't approach the quality you can get with a film camera, and they're usually much more expensive than film cameras. Also, if you're creating panoramas, a wide-angle lens works best, and most digital cameras don't let you attach such lenses.

A tripod is a must, too. For QuickTime VR panoramas, you take pictures in a circle, rotating the camera around a central point, then "stitch" them together with software. If you try to take the images while holding the camera in your hands, it's almost impossible to keep the camera level and shoot consistent frame angles. A tripod makes it easy.

Another big help is a panoramic tripod head. Companies such as Kaidan, Peace River Studios, and Bogen (which also makes professional-quality tripods) make a variety of panoramic heads, from around $100 to $1,000, or more if you add such things as motors and remote control. Panoramic heads allow you to mount your camera in portrait orientation (vertically, not horizontally), and they keep the camera's lens rotating around a central axis. Mounting the camera in portrait mode is important because it gives you a more vertical perspective; shooting in landscape mode will give you a narrow, letterbox effect. If you use a traditional tripod head, you may have the option of shooting photos in portrait orientation, but the head will probably rotate the lens a few inches outside of center, introducing distortion in the panorama.

For our tests, we tried out two panoramic heads: Kaidan's KiWi Plus ($250) and QPX-2 ($550); both have "click stops," which are indents that allow you to rotate the rig by the same amount every turn. We added Kaidan's QuickTilt Leveler ($150), which lets you level the head quickly with a few simple adjustments; without it, you must jockey with the tripod's legs to get it level. Once you've shot panoramas with one of these, it's hard to do without it. However, you can get by with a regular tripod; your results just won't be as good, and you'll have to choose the rotation angle manually, which can screw up the panorama.



To manually stitch in Spin Panorama, you set anchor points with your mouse.

Software is required to stitch together several images. For panoramas, you shoot multiple images, turning the camera by a consistent number of degrees, and you overlap the images so that the software can match up the pixels that occur in adjacent frames and stitch them together. The software also compensates for distortion and skewing in the images, crops the top and bottom of the panorama, compresses the final panoramic image, and inserts QuickTime VR controls.

You can pick from a wide variety of Mac-compatible stitching software; there isn't much available on the PC side. PictureWorks' Spin Panorama and Enroute's QuickStitch, and Roundabout Logic's Nodester occupy the low end of the price range, while Apple's QuickTime VR Authoring Studio is aimed at the well-heeled professional. VR ToolBox's PanoWorx lands in the middle of the price range. We tested only the panoramic capabilities of each product because object making is more of a commercial venture, and because you need even more equipment to get good results. So, let's see how the stitchers fared.

PictureWorks Spin Panorama

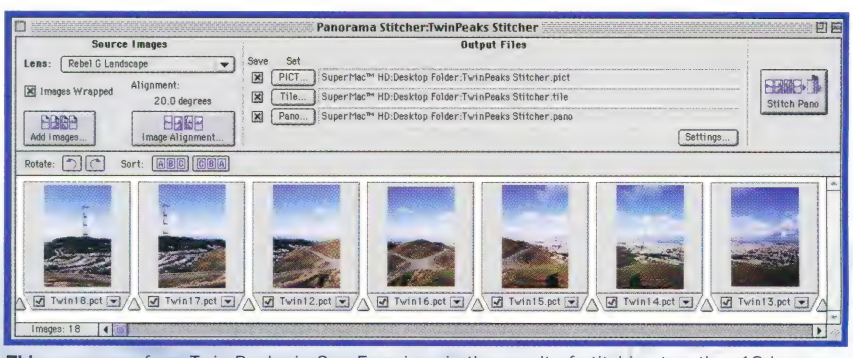
Spin Panorama has been out for a couple of years as a basic tool that requires manual stitching. The latest version, however, adds autostitching capabilities.

Spin doesn't bristle with controls; as long as the autostitch works without a problem and nothing needs tweaking, it's very easy to use. You begin a panorama by importing photos. You can only import PICT or JPEG files. Spin supports drag and drop, which is a good thing, because otherwise you're forced to add images one at a time. The preferred method is to select multiple images in the Finder, drag them into Spin, and wait for the application to arrange them. In Spin, you must rotate images one at a time, because you can't select more than one image.

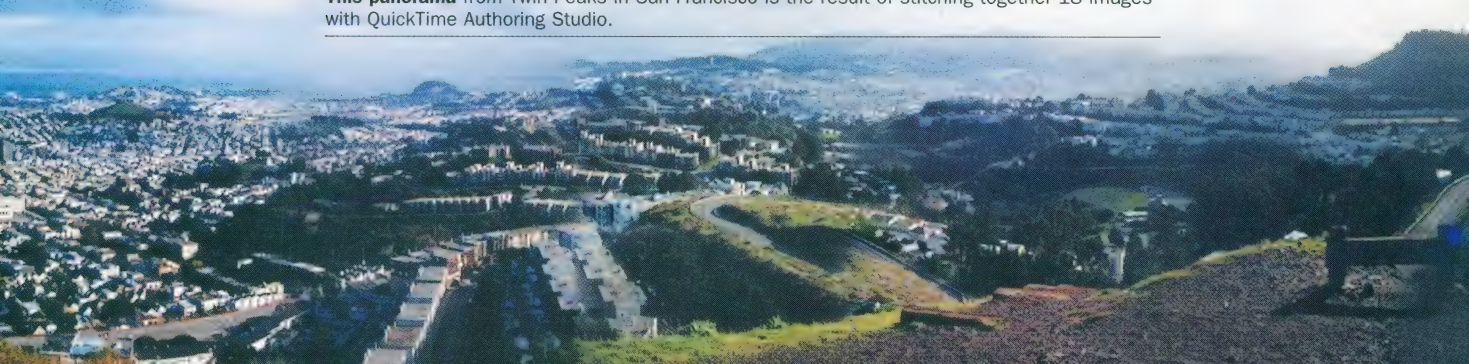
Once the images are in a row, you click on the SmartStitch button, which is the automatic pilot. Spin works more quickly than the other applications, but it frequently has problems getting all the frames to stitch together. If you use high-quality, well-constructed images (such as the ones you'd get if you use a tripod and a pano head), you might get 80% of the images to stitch properly; you'll have to manually stitch the ones that don't. The application shows you little targets in each frame with a line drawn between them; you click on each target and move it to a common anchor point in adjacent frames, thereby telling the application what to use for reference points. Easier said than done: If your frames have broad expanses of flat texture — say, clear, blue sky — you'll have a heck of a time finding good anchors.

Unlike the high-end products, you can't choose a compression/decompression protocol (codec). A codec tells the application how to minimize the file size while maintaining as much image quality as possible; different codecs work better on some files than others. The high-end products access QuickTime's codecs. Spin does have a slider bar for image quality, but it doesn't offer much range.

Spin only creates panoramas — from an acute



This panorama from Twin Peaks in San Francisco is the result of stitching together 18 images with QuickTime Authoring Studio.



angle to 360 degrees. That's as far as it goes. But for the money, it's a good way to get your feet wet.

Enroute QuickStitch

QuickStitch is another inexpensive stitching application, but it doesn't create 360-degree panoramas; it can patch together up to seven images horizontally or vertically, or multiple rows of images. It's the only application here that can do vertical panoramas, such as tall buildings. Enroute does make a 360-degree application, but it's Windows-only; the company halted development of the Mac version.

You can only import JPEG or Windows BMP files into QuickStitch, which is a drawback. You might want to use the application to create high-quality panoramic prints, for which you'd usually use a higher-quality format. It doesn't support drag and drop, so you must import pictures from a dialog box. You click on an image, wait for a preview, then drag the image into place. It's a slow process, and you must rotate images one at a time.

You don't get many options or controls with QuickStitch — it's meant to be easy to use, but the results suffer. Often the images come out badly warped, and there aren't any manual adjustments. You can choose different image sizes, but you can't choose codecs or image-quality settings. The resulting image quality doesn't approach that of the higher-end applications.

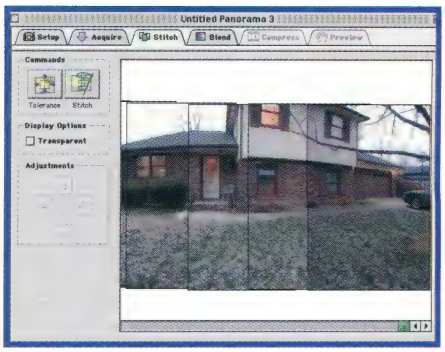
Roundabout Logic Nodester and VR Toolbox PanoWorx

Nodester and PanoWorx are products of the same company, Econ Technologies. Last year VR Toolbox acquired the application from Econ, but Roundabout Logic, which had been licensing the product, tried to stop the acquisition. The two companies are now locked in a legal battle over the software.

For the most part, the applications are still identical, though both companies have added small tweaks; the interfaces offer the same commands, but sometimes they look different and the commands are labeled differently. But in function, they're the same. So for now, we'll review them as one product, though the companies probably won't like being in the same paragraphs together.

Both Nodester and PanoWorx import TIFF or other file types (but they convert them to PICT files). To create a panorama, you navigate six windows, ranging from a setup screen to final export. Unlike the low-end tools, you can specify what type of camera lens you used to shoot the images, how many images you're using, how much overlap there is between them, and a plethora of other settings. You don't have to use all of them — many settings have an "auto" option — but when you encounter problems, you'll be thankful for them. Settings aren't explained well on-screen, though, so you'll have to consult the manual often during the learning process.

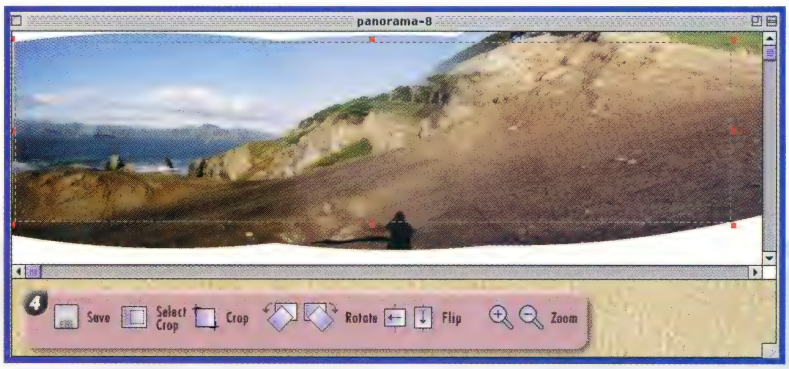
To import images, you can drag and drop from the Finder into a wheel-like interface, or you can use an intelligent dialog box. If you've set the application to work on 12 images, it'll allow you to import 12 images at a time with a single button click. Importing images is pretty slow, especially with large pictures, but all of the stitchers are poky in that respect.



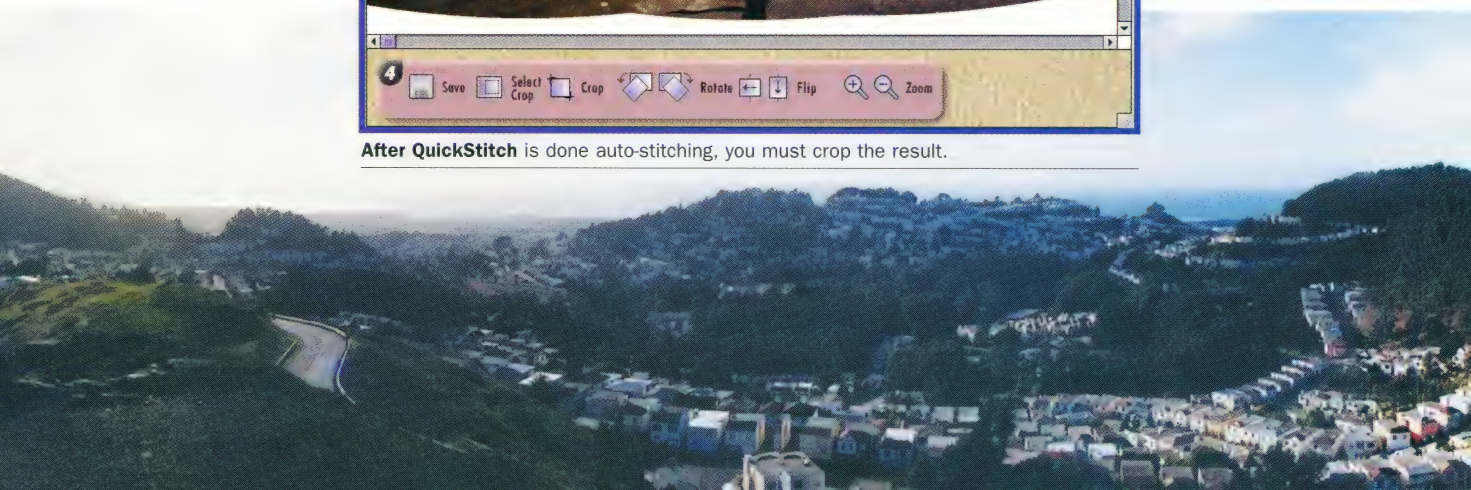
PanoWorx lets you set a tolerance within which it searches for common pixels. If it doesn't quite get it, you can adjust the stitch manually.

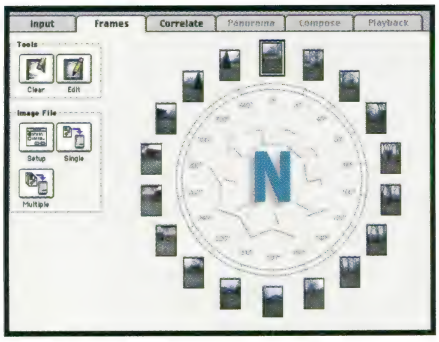
Once you've imported the images and seen them side by side, you can manually adjust them, if need be. You can choose that the images be transparent, thereby aiding you in lining them up, but you can only use the arrow keys on your keyboard or four directional buttons in the interface: You can't simply use your mouse to reposition a frame, and you can't magnify the view so you can see what's going on. But usually, the application does pretty well at lining up the images on its own.

Both PanoWorx and Nodester include a basic image editor with which you can effect minor touchups from within the application. With the other stitchers, you must use an outside image editor to work on inter-



After QuickStitch is done auto-stitching, you must crop the result.





Nodester imports the images into a wheel-like interface.

mediate files, then import the image back into the panorama software. Nodester also includes a serial number for QuickTime Pro. That's a $30 value thrown in, and Roundabout is selling Nodester for $60.

When you import good images into PanoWorx or Nodester, you get very good results. When you use less-than-stellar images — such as when you try to stitch images that were shot with a hand-held camera, or if the images weren't shot with enough overlap — you may have difficulty getting the panorama to turn out right. They have tools to get them stitched correctly, but you may drive yourself nuts tweaking.

Apple QuickTime VR Authoring Studio

Apple's own QuickTime VR software is by far the most expensive of the bunch here, but it's also the easiest to use and produces the best results. It includes everything in one basket — panorama stitcher, object maker, scene maker (in which you combine several panoramas and/or objects to create walkthoughs), and a media manager. It's a professional tool with a professional price.

It's an Apple application, so of course it supports drag and drop from the Finder. You can select all or some of the pictures and rotate them all at one time. You don't have to tell the application how many images you're going to use; it figures it out on its own.

Occasionally, when you drag a large number of images into Authoring Studio, it won't arrange them in the right order, but you can simply drag them to the correct position. Spin Panorama also allows that, but Nodester, PanoWorx, and QuickStitch don't. Once you start the application stitching, it's on autopilot until the job is done. It will handle almost any type of image (though it converts them to PICT format).

Kaidan's QPX-2 panoramic tripod head lets you rotate your camera around a central axis.

The process creates an application file, plus a long PICT file and the final panoramic file. If you need to do any touchups, you can work on the PICT file in Photoshop or another image editor, then import that file back into Authoring Studio.

Authoring Studio's stitching process works very well. With very little tweaking besides the basic camera and lens setup, it often nails the stitching on the first try. But if it doesn't, you can manually line up the images with an easy-to-use utility. The images become transparent, and you can use the mouse to simply drag them into place. The window has other, more sophisticated adjustments, but they take time to learn.

It's ironic that the most expensive application here is the simplest to use but the most capable. But then, that fits the model of many Apple products.

Round and Round She Goes

QuickTime VR is a really neat technology. With the right software, the images are captivating. You'll have people spinning and spinning and spinning. MH

Product	Rating	Thumbs Up	Thumbs Down
QuickTime VR Authoring Studio 1.01 $395, Apple Computer 800-538-9696 www.apple.com/quicktime/qtvr/	●●●●½	very easy to use, very capable	expensive
PanoWorx 1.0 $150, VR Toolbox 877-878-6657 www.vrtoolbox.com	●●●●	good stitcher, intelligent image import, image editor built in	reordering images is difficult, manual adjustments clunky
Nodester 1.5 $60, Roundabout Logic 407-327-4500 www.roundaboutlogic.com	●●●●	good stitcher, intelligent image import, image editor built in	reordering images is difficult, manual adjustments clunky
Spin Panorama 2.0 $50, PictureWorks 800-303-5400 www.pictureworks.com	●●●	inexpensive, easy to use (unless there are problems)	autostitch doesn't work well, manual stitch difficult to use
QuickStitch 1.0 $40, Enroute Imaging 650-843-1122 www.enroute.com	●●½	dirt-cheap, can stitch vertically	poor stitching, doesn't do 360-degree panoramas

We could tell you lots of nice things about CANVAS™ 6.

"The program's best features spring directly from Canvas's signature strength - the marriage of bitmap and vector technology... Deneba's SpriteLayers technology lets you create some interesting *transparency effects* that would be difficult if not impossible to make in a dedicated drawing program... We were also impressed by Canvas's new face lift, which helps your workspace stay better organized and perform more efficiently... In the competition of the graphics titans, Canvas 6 is fighting with a unique set of weapons."

Macworld — Feb., 1999

"With it's elegant interface, Canvas is a compelling alternative to suite-based solutions that require separate illustration and image editing programs to perform the same functions... Canvas has always performed well with technical illustrations, featuring extraordinary dimensioning capabilities and numerous precision drawing aids... The program warrants serious consideration from newcomers seeking an elegant and relatively inexpensive tool."

PC Magazine — Jan., 1999

"SpriteLayer technology represents an industry breakthrough because it allows users to apply an unlimited variety of compositing effects to any type of object or group of objects... [SpriteLayer] technology is an excellent piece of programming wizardry. With it, designers can easily experiment with complex graphic ideas that would have been prohibitive or impossible in any other program... Deneba has given designers a creative tool that makes it more convenient than ever to play around with any and all of their graphic elements in one place."

Digital Design & Production — Jan./Feb., 1999

But everyone else beat us to it.

"Canvas 6 is sure to please faithful users... My favorite feature is Canvas's new SpriteLayer technology, which allowed me to control the transparency of any graphical object, text, photo, or vector illustration... Canvas continues to deliver a vast scope of graphics tools in one convenient application, and does a remarkable job of breaking down barriers between bitmap and vector graphics."

PC World Online — Dec. 28, 1998

"Version 6 has dramatically improved the software's interface, significantly increased user customization and added lots of useful features... Canvas 6 delivers power and versatility at a competitive price."

eMediaweekly — Jan., 1999

"Deneba has done what Adobe has refused to do: unify graphics apps... The vector abilities are very robust. Canvas has all the tools you'd expect of an illustration app, with bonus widgets thrown in... Canvas 6.0's unique ability to combine disciplines will lead the designer down previously inaccessible creative paths... SpriteLayers composite like no other program can."

Maximum PC — Jan., 1999

Find out for yourself why everyone's talking about Canvas 6 and the revolutionary new SpriteLayer technology. Visit **www.deneba.com/machome/** to download a **FREE** fully functional 30-day evaluation kit. The graphics revolution is here, and it begins with Canvas 6.

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This ad was created and color separated using nothing but Canvas 6.

*Estimated street pricing in US dollars. Pricing does not include shipping and handling. Sixty-day money back guarantee excludes shipping and handling costs. ©Copyright 1999 Deneba Software. Limited time offer valid only in North America. All other trademarks or registered trademarks are the property of their respective owners.

Sacre Bleu

by John Poultney

Apple's Newe

Apple's newest G3 desktop models might be called "Blue Meanies," as they tend to beat the companies' older models (iMacs excepted) into submission. At least in a metaphorical way.

That is to say, the new systems have grabbed so many headlines and made for so many photo opportunities since their introduction at January's Macworld Expo, it's almost as if the public has forgotten this system's impressive predecessors. But it's true. Apple is going through a rebirth of sorts, replacing an unwieldy, complicated product line with a simpler, more elegant strategy. The blue-and-white systems are the third of four product lines promised by Apple — we've already seen the professional portable (the PowerBook G3) and the consumer machine (that's the iMac) — now we have the professional desktop. The next big step will be the eagerly awaited consumer portable.

But we digress. From their arresting new design to their outstanding upgradability and configuration options, these machines give you a lot to like, and a lot to think about.

In this Corner: Style

Apple's strategy of making computers something to be shown off is a winner. Go to any store where these are on display, and you'll see. People can't help themselves — just like with the iMac, folks walk-

ing past simply must stop, look, touch, and use these sassy systems before they go about their business. It's a wonder no one thought of a computer as a work of art before, though there have been a few attempts from PC manufacturers and workstation maker Silicon Graphics, whose stylish but stumpy O2 Unix box turned heads a couple of years back.

But no previous efforts come close to *the new G3s*. Apple's industrial design team did an excellent job with the system's translucent blue-and-white polycarbonate enclosure. It almost makes you want one just for the look. Careful, though. Such an impulsive action might make you run the risk of being labeled a *shallow person.*

Knowing as you do that true beauty comes from within, you'll of course want to look closer before making a decision. Consider the machine's symmetry, for one: The system appears square, not rhomboid, from the side. With its integrated handles at each corner, it could resemble an oversized ninja throwing star if you squint really hard. But behind the symmetry is a purpose — with the handles, it's easy to carry the machine from nearly any angle. Try that with the previous G3: It ain't easy.

Speaking of angles, this machine carries on the tradition of rounded corners and contours established to a small degree with the first-generation PowerBook G3s, and solidified with the iMac. It's a better look, certainly, but it may vex you if you're used to stacking things atop the computer or monitor (the new blue and white monitors Apple introduced at the same time also feature rounded plastics). The new machines are not completely rounded like the iMac but instead favor a convex design along the top that forms a slight valley at the edges, flattening out in the middle. Hence it's easier to stack things like Zip drives here, but we'd caution against putting your coffee up there. Of course we wouldn't recommend that anyway.

The front panel's design is marred slightly by the CD-ROM (or DVD-ROM, depending on your configuration) door mechanism. The drive uses a tray that extends from the case when loading or unloading discs, and the front bezel is covered by a blue plastic piece that folds out of the way. It works, but lends an inelegance to an otherwise organic design. The system of buttons to eject discs adds several small moving parts to the door, each of which contributes to the potential for blocking or jamming the door.

Like the iMac, an extended CD-ROM tray on the new G3 is a fragile, wimbly-wambly piece of plastic that's just asking to be broken. We would have preferred the cleaner design of a slot, as used in most car CD players.

Lastly, though the CD-ROM drive includes a headphone jack and volume dial behind the panel, Apple cautions against using either of these, as doing so can damage to the drive bezel. Instead, it suggests using the standard audio out jack and the software controls.

Aside from the audio in/out jacks, on the back panel are two FireWire ports, two USB ports, and — hallelujah! — an ADB port, so you can connect older devices, dongles (used in some software packages to prevent illegal copying), and monitors that use it for color monitoring.

All in all, the new G3s are beautifully designed, a complement to any interior decorating scheme — especially if you pair them with any of Apple's newest Studio Display monitors, available in 15-, 17-, and 21-inch versions for $499, $1,099, and $1,499 respectively.

In this Corner: Substance

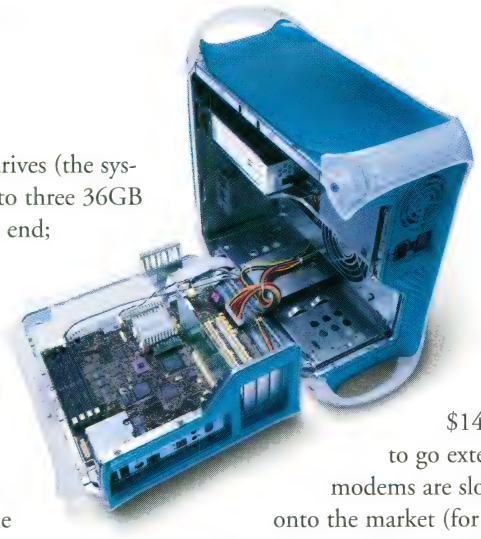
But what's a pretty exterior, you say, if there's nothing inside? Right you are. Just take a look inside the new G3s — and it's easy, because the side panel opens up with just a gentle pull, even if the machine's still running. You'll find a cleanly designed, readily expandable interior that holds a number of significant technical achievements, and some omissions that are equally significant.

Let's take the "omissions" first. Apple has decided that two long-standing technologies — floppy disks and SCSI connectivity — are over the hill, long in the tooth, dead in the water, past their prime, out to pasture. So you won't find either of these here, unless you add Apple's $49 SCSI card (Apple does not offer a floppy option). But if you're like most users, you probably won't miss them either. Though there are pockets of resistance, Apple is mostly right in its assumption that floppies are outdated.

Unlike the (almost) impenetrable iMac, there are several options to mess with the internals of this system. On the motherboard, Three vacant PCI slots stare plaintively at you, waiting for expansion cards; a fourth holds the excellent ATI Technologies 128-bit graphics card, which packs a heady 16MB of video RAM.

You'll also find two bays where you

st G3s Pack a Punch



can add more hard drives (the system can support up to three 36GB drives at the extreme end; that's more than 100GB of onboard storage). There's also a space to add a Zip drive or other device that's accessible from outside the unit. Apple offers one configuration with a built-in Zip.

If you want to add more RAM (the system handles up to 1GB), the memory slots are easy to access. The new G3s use a type of RAM called PC100, a very fast design (eight nanoseconds, compared to the previous G3's 10 nanoseconds and the earlier Power Mac's 60 nanoseconds), which is also used in Wintel-standard machines. These aren't as expensive as custom-built Mac RAM, but earlier RAM designs won't work with the new system. It would be nice if users could swap RAM from other machines, but Apple tends to change its memory types pretty frequently — not much of a surprise there.

There's also a special slot for an internal 56K modem, which Apple will include for an additional $100. Alternatively, users can get a Global Village design for $140. If you want to go external, USB modems are slowly trickling onto the market (for more on modems, see this month's NewsWire section).

Make sure all the cables are out of the way when you close the door once you're done inspecting the interior or adding devices; it's pretty easy to snag the wires if you're not careful.

Speedy? Yes, Indeedy!

You wouldn't expect Apple to introduce a new Mac generation that wasn't speedier than earlier iterations, and the new G3s don't disappoint here. Available in 300MHz, 350MHz, and 400MHz configurations, these models offer impressive speed — about 40% faster than the iMac — though it is possible to get similar, even faster performance by upgrading first-generation G3s with accelerator cards, according to our speed tests.

In system speed tests of 350MHz and 400MHz designs, using Symantec's Norton Utilities diagnostic package, we got some strong results, at least compared to the original G3s. However, you'll notice that in some cases a first-generation G3 with a PowerLogix or XLR8 400MHz G3 upgrade card (see the March 1999 *MacHome* for more on these) got higher ratings in some categories.

It should be noted that while our tests with upgrade cards provided higher CPU, FPU, and overall system ratings, real-world performance is often based on the integration of various system components rather than on the speed of one or two pieces. Hence, a system with a fast processor but a slow hard drive might be less efficient than one with a slightly slower CPU but a faster drive, because the system's data flow would be better accommodated. Also, the new systems have a 100MHz system bus, while the first-generation G3 Power Macs used a 66MHz bus. Data travels quicker on a faster system bus, so better performance is likely for things like scrolling through documents, opening windows, and switching between tasks.

For an example of how much things have progressed in a couple of years, consider this comparison: In a processor-intensive Photoshop test pitting the new G3/400 against a UMAX S900 Power Mac clone upgraded with a 250MHz G3 card, the task, involving pixel-extrusion on a very large file, took nearly 20 minutes on the old system, but just over 7.5 minutes with the new.

FireWire's Outside Chance

Aside from a faster CPU and system bus, the main differences between this generation and the first G3 systems are the cosmetic improvements and the addition of USB and

New vs. Old: How the G3s Stack Up

Model	System Rating (overall)	Processor	Video	Disk	FPU (floating point unit)
G3/350	861	897	765	679	819
G3/400	953	1061	691	627	931
G3/233 (first-generation G3, standard configuration)	571	583	528	517	537
G3/233 (w/ PowerLogix 400MHz card; 3:2 backside cache ratio)	987	1146	650	575	940
G3/233 (w/ XLR8 MAChSpeed 400MHz card; 3:2 backside cache ratio)	979	1136	648	566	940

Scores generated with Norton Utilities 4.0's System Info; higher numbers are better.

FireWire connectors. USB, introduced on the iMac last year, has brought well-documented changes to the Mac landscape. FireWire is another story entirely.

FireWire is Apple's name for the IEEE (Institute of Electrical and Electronics Engineers) 1394 High Performance Serial Bus standard; Apple invented it, and it was later standardized by this international organization. This high-speed bus has a standard transfer rate of 400Mbps — 10 times faster than the old G3 Mac's built-in SCSI.

It is possible to boost SCSI performance close to FireWire speed, but it's a very expensive proposition, requiring costly cards and cabling. Additionally, cable lengths can be far greater with FireWire than SCSI — 72 meters compared to SCSI's six meters (extendible to 12 meters with a repeater). And the cables themselves are far slimmer than SCSI.

More exciting than FireWire's physical properties is its extendibility. While a SCSI chain is limited to seven devices, FireWire supports up to 63, and more with a network bridge. Devices can be "hot-swapped," meaning they can be connected and disconnected without restarting or powering down the system, as is needed with SCSI. Also, FireWire networks can automatically reconfigure themselves to accommodate devices that need a faster data flow than others. The list of advantages go on and on, and we think Apple's decision to integrate this technology at the motherboard level is a solid one. Not many FireWire devices are available yet, but several intriguing announcements, including video-capture boxes and hard drives, are set to break soon. Some great high-end video gear works with these connections as well. We predict that the options for FireWire will multiply just as the Mac they did with USB peripherals.

Word Up

If you appreciate great engineering, expansion capability, and excellent designs, these machines are for you. Best of all, they're available for a relatively thrifty $1,599 at the low end, though of course they can get much more expensive. We think the low-end configuration is an excellent value for home and small-business users, giving you plenty of processing power, excellent graphics performance, and the important potential for upgrading the system as your needs grow. MH

rating 4½

Power Macintosh G3 Series
Apple Computer
800-538-9696
www.apple.com

Superb design, great performance, easy internal access, fast connectivity options, expansion capabilities

Poorly implemented CD-ROM mechanism, possible to snag wiring when opening and closing access door

Product Information

Apple's blue-and-white G3s are available in four configurations:

300MHz PowerPC G3
512K backside cache
100MHz system bus
64MB SDRAM
6GB Ultra ATA drive
24X CD-ROM drive
ATI RAGE 128 graphics
16MB Video RAM
$1,599

350MHz PowerPC G3
1MB backside cache
100MHz system bus
64MB SDRAM
6GB Ultra ATA drive
5X/32X DVD-ROM drive
ATI RAGE 128 graphics
16MB Video RAM
$1,999

350MHz PowerPC G3
1MB backside cache
100MHz system bus
128MB SDRAM
12GB Ultra ATA drive
24X CD-ROM, Zip drive
ATI RAGE 128 graphics
16MB Video RAM
$2,499

400MHz PowerPC G3
1MB backside cache
100MHz system bus
128MB SDRAM
9GB Ultra2 SCSI drive
24X CD-ROM drive
16MB Video RAM
$2,999

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By Art Jones

The Write Stuff

Learn to Write Letters and Business Plans

For some of us, the very thought of writing business correspondence — plans, letters, bid proposals, even forms — is enough to strike terror in our hearts. To that end, a number of software companies have begun to distribute business writing products, which promise hand-holding and template-making for all kinds of work-related writing tasks, thus freeing you to actually run your business. But do these words-in-a-box really work?

We looked at some of the common hurdles facing small businesses, then considered three software products made to deal with them: Business Plan Toolkit 7.0 from Palo Alto Software, and Small Business Fundamentals and 2001 Sales and Marketing Letters, both from Model Office.

The Business Plan

Starting your own business is no easy undertaking. Where do you start? You must have a solid business plan if you expect any banker or investor to talk to you. But what do you get from planning? Tim Berry is the president of Palo Alto Software, which makes Business Plan Toolkit 7.0. He explains that a business plan helps you set concrete goals, responsibilities, and deadlines for your business, and it helps you assign tasks to people and establish deadlines for tracking their implementation. "A practical plan is 10 parts implementation for every one part strategy. The plan should provide a forum for review and course correction." In short, your business plan lays out in clear terms what your important goals are and a timetable for achieving them.

When you install Business Plan Toolkit, three folders are placed on your hard drive: Documents, Spreadsheets, and Sample Plans. The Documents and Spreadsheets folders contain template files. The Sample Plans folder contains 20 complete plans that can be changed and used as a basis for your individual plan. The sample plans are based on the actual busines plans of existing companies.

For those looking for a way to fund their new businesses, the CD-ROM includes a folder containing a database of venture capitalists. The list of more than 300 names, addresses, and telephone numbers is stored in four different file formats: .txt for word processors, .xls for spreadsheets, and .dbf and .mdb for databases. Call 'em up and grab some cash. The CD also has a folder containing the manuals *Getting Started* and *Hurdle: The Book on Business Planning*, which Berry wrote. Both are included in paper form for those who prefer pulp to pixels. *Hurdle* is an excellent resource — while it's not the equivalent to getting a Harvard MBA, it will give you some discussion on important topics like understanding your market and making forecasts.

On the software end of things, Business Plan Toolkit gives you a seven-step process with which to build a business plan. First you pick your plan type. There are 20 samples to choose from, covering categories in retail, service, and manufacturing, from Acme Consulting to Trend Setters Hair Salon. Next, describe your business in your own words, using one of the sample plans as a guide. Think about your business and what you are doing; don't just plug in your name, and don't spend too much time showing off how much you know about your business. Finance people, says Berry, are more interested in results and how you intend to get them.

Next, define the market: Write about your customers, the competition, and

LYDIA HESS

the market potential. Be realistic. As Business Plan Toolkit warns, the most important part of a business plan is the setting of goals and timetables. Don't promise more than you can reasonably deliver. Sell your team (or yourself, if you're going it solo).

Finally, forecast your sales. Put in your numbers (using the sample spreadsheets as a guide), then support those numbers. The templates are designed to create complete financial projections, but you have to be able to explain how you came up with your figures. Put it all together, and there you go. Now you're ready to trot down to your local banker or venture capitalist, plan in hand, and make your pitch.

But before you do, ask yourself the following questions: Is the plan simple? It needs to describe what your business does in an easy-to-understand manner. Is it specific? It must include specific actions and activities, including completion dates, the people responsible for completion, and budgets. Remember, tracking is very important in measuring success, and you can't track without landmarks. Is it realistic? The sales goals, expense budgets, and achievement dates must be believable. Is it complete? It must cover all of the necessary elements. The plan requirements will vary depending on the industry and context, but you must cover all the bases.

Software 101

Is any product as good as its packaging suggests? Business Plan Toolkit 7.0 provides you with great tools. However, if you've never seen a hammer, could you explain its operation to an experienced contractor? While the software helps you figure out what you need and where you need to go, it doesn't provide you with basic business skills. You're on your own with those. Eric Ross, principal of Straight Ahead Productions, and Michael Smethurst, director of production and a principal in the digital marketing and online advertising firm SF Interactive, both have had some experience writing business plans, and they both agree that software alone will not take you to the promised land.

Ross recently completed a 10-week course through the University of California's Haas School of Business. The program, Premier Fast Trac II, is a nationally syndicated course that is aimed at teaching people how to develop a business plan. The program (at least in Ross's case) is taught by local professionals with close ties to the local financial community — the same community to which you would be trying to sell your plan. Taking this extension course was Ross's first step in trying to create a professional business plan.

Have you ever had to give some unpleasant news to a favorite client but didn't know how to start?

The result was a concise plan of about 30 pages. The hardest part for Ross was determining what a reasonable expectation of financial growth is. "It's tough to think through your business," says Ross, "and develop a strategy to take you where you want to go financially."

After examining Business Plan Toolkit, Ross cautioned that you need to be sure that you understand your business and don't use software as a grown-up version of fill-in-the-blanks. Smethurst agrees. "If the software is too automated, you will end up not understanding your own plan." He also warns that business plan outlines that come bundled with other software packages, such as Microsoft Office, ClarisWorks, or Quicken, may be too simple to be useful. In our examination, we found that the sample business plans in Office 98 don't begin to approach the variety and depth found in Business Plan Toolkit.

Smethurst has overall concerns with any kind of "business-plan-in-a-box" software. "How broad are the industries addressed in the software? Make sure the product has samples that come close to what you are doing," he says. With the Toolkit's 20 sample plans, most people should be able to find one that comes pretty close to their own business. But if you don't find something on the CD-ROM, check out Palo Alto Software's Website for more samples (www.bplans.com). There you'll also find educational materials on business planning for entrepreneurs and those with small businesses.

Business Plan Toolkit comes in three versions: one for Microsoft Word and Excel, one for Microsoft Works, and one for ClarisWorks. You must have one of these three packages in order to use it.

Overall, I was impressed with the breadth of business plan samples offered in Business Plan Toolkit. However, some interactive tutorials would be extremely helpful.

Business Basics

Once you've secured funding (even if it's with credit cards), you can still use some prefab help to run your business. Why create from scratch when you can crib off of tried-and-true templates?

Small Business Fundamentals contains eight major categories of guidelines, tips, and tools, including: Starting Your Business, which helps you to assess your business needs, and covers financing, home-based business guidelines, and filing for licenses; Managing Your Business, which deals with sales and follow-up and gives you short courses in accounting methods and bookkeeping; Protecting Your Business, which explains the various types of business insurance and provides another folder on finding and evaluating an insurance broker; Rescuing Your Business, which provides some insights on problem areas such as sales, employees, and operations management; and Selling Your Business, which introduces you to business valuation methods and has folders containing sample asset valuation spreadsheets as well as sample contracts and agreements. Another section, Model Business Plans, provides sample business plans and spreadsheet templates. The plans cover

the categories of distributor, manufacturer, retail, service, and large-company spin-off. There is only one of each for a grand total of five, so for business plans, it doesn't hold a candle to the extensive offerings in Business Plan Toolkit.

The software uses a browser that makes it very easy to use. Open the Small Business Fundamentals browser and select the first folder, Welcome to Entrepreneurship, and you will find more folders and files explaining how to use the software — it's really pretty easy to get going. You can either skim through the folders or use the browser's Find feature. Select a folder in the browser, and its contents appear in a frame on the other side of the window.

To help keep pace in the business world, Small Business Fundamentals provides a useful glossary of terms, as well as a directory of names, addresses, phone numbers, and URLs for small-business development centers, small-business investment companies, minority-business development agencies, women's business centers, and credit-reporting agencies in all 50 states. An instructional book, *The Street-Smart Entrepreneur*, is included along with the Small Business Fundamentals CD as an additional reference.

Write Me a Letter

Have you ever had to give some unpleasant news to a favorite client but didn't know how to start? Perhaps you need to tell one of your suppliers that you won't be buying their product anymore but you just can't find the right words. That's where Model Office's 2001 Sales and Marketing Letters can help you. The product contributes the content (sample letters) and all you have to do is find the topic you require and tailor the letter to fit your needs. Hence the name *exampleware*. The sales and marketing letters cover such areas as customer relations, credit, collection (those are always fun), and many more.

As a sales veteran, I sometimes still find it difficult to get started in writing routine business letters. 2001 Sales and Marketing Letters provides more than enough samples, covering pretty much every conceivable topic. Many of them provide useful ways to get started, because they contain the basic information that's necessary for each letter-writing genre. But, of course, it's very important to rewrite the letter to suit your purposes, and to inject your personality into your correspondence. Of course, this is much easier said than done. It's crucial to get feedback from a trusted peer, just as you would if you were writing a letter from scratch. To help you with the P's and Q's of correspondence, 2001 Sales and Marketing Letters thoughtfully includes a soft-cover volume of the Random House *Guide to Good Writing*.

2001 Sales and Marketing Letters uses the same friendly, easy-to-use browser setup as Small Business Fundamentals, and when both products are loaded, they are placed in the same folder automatically, which makes them easy to manage.

As with Business Plan Toolkit, both of the Model Office products lack online tutorials. They may add to the cost of the software, but each of these products is crying out for a little bit more direction, which only an interactive tutorial can provide.

Off to Work We Go

No software can take the place of years of education and/or experience. However, when used in conjunction with both, these products can give you an invaluable boost in approaching a writing task. One of the biggest wastes of time is re-inventing the wheel, but keep in mind that incorporating a template into your own writing still requires a healthy amount of hard work.

Business Plan Toolkit 7.0

$89, Palo Alto Software
www.paloaltosoftware.com
Requires MS Office, AppleWorks (a.k.a. ClarisWorks), or MS Works

Many sample plans, easy to use with your own office software

Lacks interactive tutorials, a bit expensive

2001 Sales and Marketing Letters

$25, Model Office
800-801-3880
www.modeloffice.com

Many choices in many categories, easy-to-use browser

Lacks interactive tutorials

Small Business Fundamentals

$45, Model Office
800-801-3880
www.modeloffice.com

Very easy-to-use browser software, good contact database

Very few samples, lacks interactive tutorials

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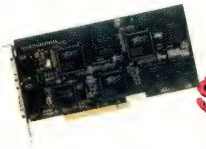

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By Jeff Battersby

Holding Chaos at Bay

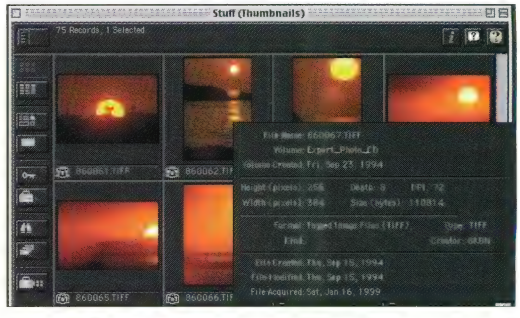
Cumulus vs. Portfolio vs. ImageAXS

You present yourself as the maven of personal organization — pristine desk, sock drawer without mismatches. But we know the truth. Buried deep within the heart of your cluttered hard drive lurks unimaginable disarray — digital photographs with senseless file names such as "000312.psd," and lost sound files crying out to be found.

It's a jungle in there, and you have no idea how to tame it. Cumulus Desktop 4.0, Cumulus Desktop Plus 4.0, Extensis Portfolio 4.0, and ImageAXS Pro 4.0 are programs designed to take virtually any form of media — from AVI to QuickTime — and help you organize them into neat, easily accessible groups. Each of the programs makes cataloging your media as simple as dragging and dropping files, folders, and disks onto an open program window. They also allow you to assign keywords to any of your media files, making it simple to group disparate files into single categories. You can find such a product to suit any budget, but we found a higher price doesn't necessarily indicate a better product.

Cumulus Desktop 4.0 and Cumulus Desktop Plus 4.0

Cumulus Desktop is the less-expensive, weaker sibling of Cumulus Desktop Plus. Both programs have an integrated database — as do all the programs reviewed here — and support more than 70 file types. They both sport an easy-to-use interface: The catalog list window looks and acts just like a standard Finder window. Simply dragging and dropping any file, folder, or mounted disk volume onto an open Cumulus catalog window begins the process. The programs are intelligent enough to assign categories to your media based on the folders they reside in. Cumulus's "categories" are the same as the "keywords" found in other cataloging software; they call up a group of images under their names. If you have three folders labeled "Buildings," "People," and "City Sounds" inside a folder labeled "San Francisco," Cumulus will assign the categories accordingly, using your folder titles. The difference between the two versions? Desktop Plus adds powerful AppleScript support, allowing you to perform repetitive tasks with the touch of a button; a royalty-free catalog browser; and an Internet server, so you can publish your catalogs on the Net. Both programs share a similar file format, so files created by the Plus version can be used by the standard version. But neither program will allow two users to share a catalog simultaneously. For that feature, you'll need to fork out $2,500 for Cumulus's server product. That's a ridiculous expense for any small group environment.

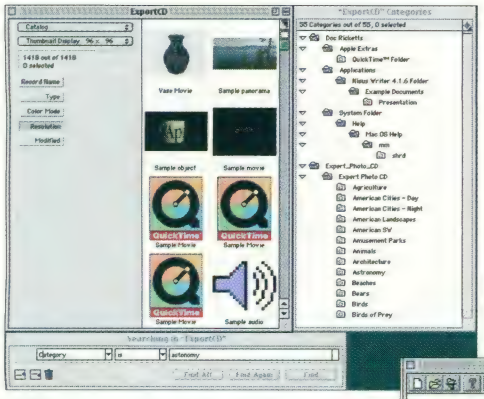


ImageAXS gives you precise control over thumbnails.

Extensis Portfolio 4.0

Chances are that if you're familiar with any media management software, you're familiar with Portfolio — though you may have known it as Adobe Fetch. Extensis purchased Fetch from Adobe and then promptly turned the program on its ear. After its original acquisition, Fetch was revamped from the ground up to include cross-platform file sharing and a powerful, thoroughly customizable media database. Like Cumulus, Portfolio allows you to drag and drop anything, from a single file to an entire hard drive, to begin the cataloging process. Also, as with Cumulus's categories, Portfolio automatically catalogs files and includes file folder names as keywords.

On the other hand, the Portfolio interface is not nearly as familiar or as easy to navigate as the Cumulus Finder-based one. And even though it's possible to customize the type of data you're



Cumulus uses a familiar "Finder" interface.

viewing, the information in Portfolio is displayed in a manner that's reminiscent of urban sprawl.

For small businesses and other workgroups, Portfolio far exceeds Cumulus both from a price and network perspective. Right out of the box, Portfolio can share files across a peer-to-peer network, so you'll be spending far less money to get this feature, even for workgroups as large as ten people. To be fair, while Cumulus costs quite a bit more, it also provides powerful administration capabilities and allows database access to Win95/98/NT, Mac, and UNIX users, making it a well-rounded client/server product.

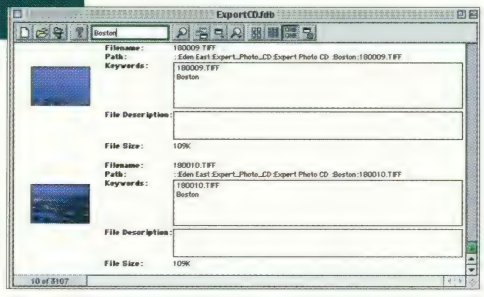
Unlike Cumulus, Portfolio makes creating Web-based catalogs a simple export process. Just select the images that you want to include in your Web catalog and then export those pages as HTML. Like the rest of the Portfolio interface, the resulting Web pages are not pretty, but they do make it easy to share your catalogs on the Web.

Fortunately, Portfolio allows you to tweak the underlying HTML to make your pages a little easier to look at. But Portfolio doesn't provide any way to create a standalone catalog via a royalty-free browser. If you want anyone to view or use your media catalogs, they will need to purchase the entire program.

ImageAXS Pro

All the standard fare applies with ImageAXS Pro — dragging any files to an open ImageAXS window automatically begins the cataloging process. But ImageAXS takes the process once step further by letting you drag anything to its application icon to begin the process. Deriving keywords from folder names is a little more convoluted though; you'll need to hunt down a preference and change it before the program will do this favor for you.

ImageAXS integrates many of both Cumulus's and Portfolio's best features. On the interface front,



Portfolio databases can be easily shared with a team.

ImageAXS is the winner hands down. Smooth on the eyes and very customizable, ImageAXS makes it easy to view your cataloged media in virtually any manner you please. Also, like Portfolio, ImageAXS allows you to customize database fields, so the program can easily flex to your specific needs rather than forcing you to fit into some programmer's predefined box. ImageAXS can also export any of your selected images to the Web in a manner so navigable that you won't need to tweak a single line of HTML. Not only do the exported pages include well-organized thumbnails, but the program formats the page such that single-clicking any thumbnail brings up a new page with the full-sized image. To top it off, ImageAXS can also share files over a peer-to-peer network.

The icing on the cake is the e-ZCard feature, which lets you create a standalone portfolio of your images that can be distributed to anyone. An e-ZCard is created by a simple export process, similar to the way you export Web pages. During the process, you can choose whether you want the e-ZCard to run on a Mac, a PC, or on both platforms. The final result is a very slick means of distributing your art or other digital media. And, unlike a standard royalty-free catalog browser, the e-ZCard looks more like a presentation.

The Final Decision Whether you want to catalog photos from your digital camera or you're maintaining a media database for a large enterprise, any of these programs will fit the bill, far surpassing the programs that usually ship with digital cameras. But if you want an inexpensive program for media management that also exceeds its digital call of duty in terms of ease of use, finding and sorting, and publishing, ImageAXS is the way to go. MH

rating 4½

ImageAXS Pro 4.0
$199, Digital Arts & Sciences
510-814-6100
www.dascorp.com

Loads of customizable features, excellent interface, e-ZCard portfolio creator

Lacks manual

rating 4

Portfolio 4.0
$200, Extensis
800-796-9798
www.extensis.com
Power PC required

Excellent database customization; easy, inexpensive networking

Interface lacks refinement, no standalone browser

rating 4½

Cumulus Desktop Plus 4.0
$595, Canto
415-905-0300
www.canto.com
Power PC required

Powerful database, royalty-free browser, supports AppleScript, contains Web server

Way too expensive, not networkable without $2,500 server

rating 3

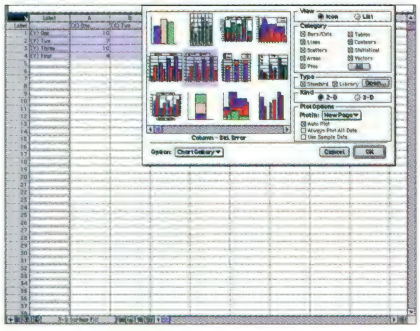
Cumulus Desktop 4.0
$100, Canto
415-905-0300
www.canto.com
Power PC required

Powerful database, inexpensive

No royalty-free browser, not networkable without $2,500 server

DeltaGraph 4.5

I look at DeltaGraph 4.5 as the return of an old friend. Version 1.0 of this graph-making tool helped me to create a complex presentation. Although the program was a little rough around the edges, it made the process a breeze.



In 1999, DeltaGraph is back with a new publisher (SPSS acquired it from DeltaPoint, Inc. in 1997). Version 4.5 has amassed some great new features. These include the ability to import data from Microsoft Excel 98, eleven new chart types, and support for more graphics file formats. It also includes support for AppleScript, which can help automate updates to existing charts.

DeltaGraph does so many things so well. You can start a chart simply by entering your information in a spreadsheet-like screen, or just by importing that data from Excel. From there you select from more than 80 chart types, and then have the program build your chart to your exact specifications (or just use the default style). The operation takes seconds to complete, and the program will guide you toward the most appropriate charts to use so you don't get dizzy figuring out what to select.

Extensive text tools, multiple undos, and a built-in spell checker help you eke that last ounce of perfection from the completed chart.

When all is said and done, your chart can be printed directly from DeltaGraph, or it can be exported in such formats as EPS for use with your favorite desktop publishing program. There's also support for the Pantone matching system, so you can specify your charts' colors with precision.

It's hard to find much that DeltaGraph doesn't do. If anything is missing here, it's support for the Mac's 3D features, which are part and parcel of another charting program, Adrenaline Charts Pro (See *MacHome*, December 1998).

The Final Decision DeltaGraph 4.5 is a winner. The program is easy to use and offers a wealth of features that will suit both the small business and large industrial conglomerate. It's nice to know an old friend is back, better than ever.

— Gene Steinberg

rating ●●●●½

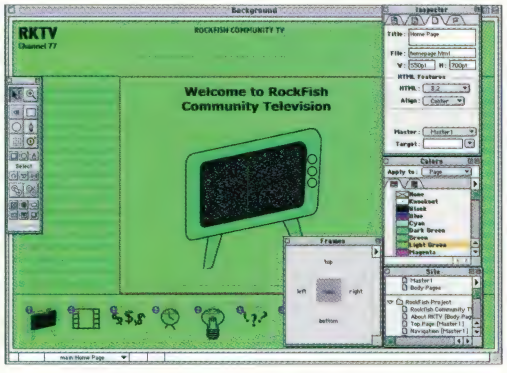
$299, SPSS Inc.
800-621-1393
www.spss.com

👍 **Huge set of charting and text creation tools, multiple undos, online spell checker, AppleScript support, support for '030 Macs**

👎 **Limited 3-D support**

Freeway 2.0

Freeway is an impressive Web page creation tool that takes a lot of tedium out of the process. And the new version eradicates the weak points while adding significant new features.



Version 1 of the program provided no facility for reading HTML and therefore was incapable of working with existing Web pages. Version 2.0 has almost solved this problem: You can easily import anything from a single page to an entire Website — everything except the image maps, which allow pictures to be hyperlinked.

Frames and tables were another of Freeway's former weaknesses; there was essentially no way to create them. This too has been rectified. Freeway's table tool is quite simple to use, and the program's frame editor is as intuitive as PageMill's, which is one of the best frame tools in the business. The program also includes support for cascading stylesheets, which gives you a sophisticated level of control over the look of your page, and Java —even allowing you to create new Java actions to the program.

Because Freeway is meant to be a design tool, it provides features unavailable in any other Web design program. You can easily create GIF-based backgrounds and bitmapped display text from within the program. While you'd never want to use the program for creating all of your images, both features are handy in a pinch.

Despite the improvements, Freeway still does trip over HTML a bit. Although you can import HTML documents into Freeway, you can't edit the HTML within the program and have it be automatically reflected in your Web page — an incredibly useful feature available in Macromedia's DreamWeaver and GoLive CyberStudio. The program also lacks "Balloon Help," which explains what each button and tab is for.

The Final Decision Though its HTML capabilities are not quite as strong as those of CyberStudio, Freeway is a powerful, intuitive program that makes Web page design as easy as desktop publishing.

— Jeff Battersby

rating ●●●●

$299, Softpress Systems
800-853-6454
www.softpress.com

👍 **Intuitive DTP-like interface, excellent frame tool**

👎 **HTML import/support still on the weak side**

In one hundred years,

space travel will be

commonplace. You, however,

will be dead.

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The Realistic Astronomy Software

Xenofex 1.0

Contrary to popular wisdom, lightning does strike twice in the same place. One well-placed bolt is all you need, however, to fry your screaming boss or the cat whose tail keeps swishing across your monitor. Xenofex 1.0, a set of plug-in filters for image-editing programs such as Adobe Photoshop and Corel Photo-Paint, lets you zap whoever you want, wherever you want, as often as you like, with bolts of garish, frightening colors. And you won't suffer any pesky real-world guilt for doing it.

Those of you with more noble intentions can still have wicked fun with Xenofex's 16 plug-in filters, which include Distress, Rounded Rectangle, Flag, Stain, Electrify, Puzzle, Cracked Earth, and Little Fluffy Clouds. To use them, though, you need at least 16MB of RAM and a compatible image-editing program, such as Adobe Photoshop 3.04 or higher (Alien Skin's Website has an up-to-date list).

The control window for each filter provides sliders to adjust appropriate characteristics, such as Glow Width for Lightning or Fold Size for Origami. Using extreme values creates unexpected effects; for instance, a high Surface Hardness value makes Little Fluffy Clouds look like plastic. Combining the filters also yields odd results. I applied Electrify, Crumple, and Stain to text and got what looked like a topographical map.

Finding just the right effect may take a lot of tries. To help, each filter has a menu of several preconfigured settings; you can also save your own settings and add them to this menu. The resizable preview window lets you zoom in and out, and you can move the preview area to see the effect on any part of your image, making experimentation painless.

The Final Decision Even if you don't have vengeance on your mind, you'll find Xenofex to be both useful and fun. Me, I'm no angel. I'm going to use Cracked Earth to give my enemies lizard skin, and I'm going to enjoy it.

— Ellen Rush

rating ●●●●½

$129, Alien Skin Software
888-921-7546
www.alienskin.com
PowerPC required

Great effects, savable settings, adjustable preview window, easy to use

Won't run on versions of Photoshop prior to 3.04

Zip USB Drive

Files aren't getting any smaller these days. Try experimenting with any graphics or multimedia authoring program and you'll soon have files pushing 20MB. The Zip drive, which has hitherto used the SCSI interface to transfer data to and from 100MB Zip disks, has been one of the standards for cheap, lightweight, reliable, removable storage, and now the Zip is available for USB Macs such as the iMac and the new G3 tower.

I found the USB Zip drive to transfer data at an average speed of 19MB per minute, which is much slower than the theoretical speed limit of USB — 90MB per minute. But compared with the average data-transfer rate of both the Imation and Winstation SuperDisk drives, 8MB per minute, the USB Zip's performance is nothing to sneeze at.

Also, Zip disks, even when half full with data, appear almost immediately on the desktop when you place them in the drive, whereas both SuperDisk drives tended to chew on each disk for a second or two before it would appear.

And in keeping with the sprit of the new designs coming out of Apple, evident in the iMac and the new G3s, the USB Zip is encased in a translucent blue shell, showing you the cool lights, wires, circuitry, and levers that allow the drive to do its duty. And like the original Zip drive, you can store it standing up or on its side.

My only complaint about the drive is that when you eject a disk, the drive spits the disk out right onto your desk, rather than popping it half out, as the SCSI version did. If you're ready for it, you can catch the disk as it flies out, but you shouldn't have to play catch with a disk drive.

The Final Decision If you're looking for good, cheap, reliable USB storage, pick up a Zip drive. No, you can't use it to read floppies, and no, you can't store 120MB on a Zip, only 100, but Zip disks are still fairly widely used, and the USB version of the drive boasts the fastest performance of any USB removable available to date.

— David Weiss

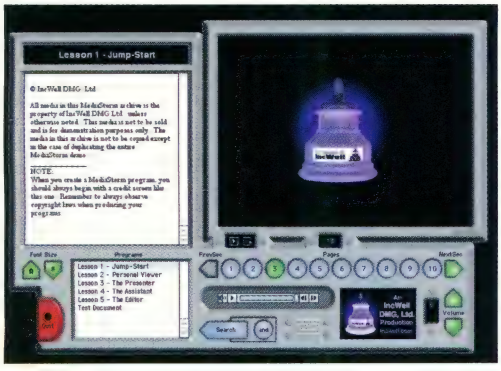
rating ●●●●½

$150, Iomega
800-697-8833
www.iomega.com
USB Required

Fast, versatile, disks mount quickly on desktop, cool look

Overly fierce disk eject

MediaStorm 1.0



MediaStorm is a multimedia development tool designed specifically for people who don't want to be bothered with tackling the vagaries of more powerful programs like SuperCard, HyperCard, or HyperStudio. In principle, the idea is brilliant, but MediaStorm lowers the bar too far.

You create presentations in a multi-paned window that allows you to add text, graphics, and sound. Presentations are then viewed using the Personal Viewer, a TV-like interface with text and graphics; the Presenter, a full-screen display similar to what you would expect from PowerPoint; and the Assistant, a smaller version of the Personal Viewer. Navigation is the same, no matter which viewer you choose: You press numbered buttons to jump from segment to segment.

MediaStorm presentations only barely fall under the category of "multimedia." While it's possible to display QuickTime movies and play sounds while each segment is presented, most of the presentation is text-based. You look at a picture, you play a sound, read some text and then click a button to move on to the next page where you repeat the same drill. This makes MediaStorm presentations about as appealing as Uncle Miltie's vacation slides. Also, the program doesn't provide any of the most basic graphic transitions — wipes or dissolves — to help break up the monotony between segments. The only animation available is through QuickTime, which most of MediaStorm's target audience will be unlikely to mess with. Also, MediaStorm only gives you three presentation formats, in stark contrast to HyperStudio and SuperCard, which are amazingly versatile in this regard.

The Final Decision IncWell makes a gallant attempt at providing simple multimedia tools for the masses. Unfortunately, weak presentation tools, limited customization of the presentation interface, and lack of standard presentation transitions make MediaStorm not much more than a breeze.

— Jeff Battersby

rating 1

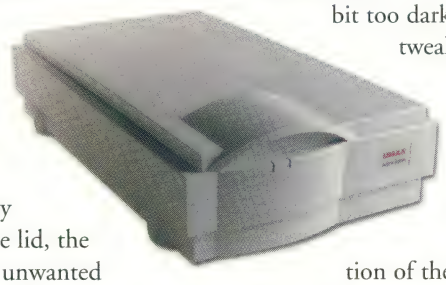
$60, IncWell Digital Media Group, Ltd.
530-647-8541
www.incwell.com
PowerPC required

Easy to learn and use

Missing even the most rudimentary multimedia tools; lacks the power, refinement and depth of even the most basic programs available

Astra 2400S

If you think the Astra 1220S is just a wee bit too small, and if you think its 1200dpi optical resolution is a bit too coarse, let me introduce you to Umax's Astra 2400S. Yes, the 2400 refers to its resolution, and in addition, the 2400S has a bigger scanning bed so it can accommodate legal-sized documents.



Like the 1220S, the 2400S comes in a sturdy shell. It has a large, wide lid, the better to block out any unwanted light, and it sports a large, curved handle, which makes it easy to reach over and grab when you're in the throes of a scanning frenzy. Unlike the 1200S, which puts the scanning head lock underneath the scanner (you can use this to lock down the scanner if you need to move it), the 2400S puts it on the back. And the 2400S has another novel technological improvement: an on/off switch. It also has the abiltiy to add a transparency adapter, which costs $199.

In terms of performance, it's comparable to other scanners with the same resolution, such as Epson's Perfection 636, although at first, the "auto-adjust" settings resulted in scans that were a bit too dark. With proper tweaking it can capture very subtle gradations in color. And with a bit less than twice the optical resolution of the 1220S, you can blow up images to be much bigger without them appearing pixelated. Since it uses a SCSI interface, it's about as fast as you'd want a scanner to be, taking a mere half a minute to scan a letter-sized document at 300dpi.

The 2400S comes with VistaScan, which is an extremely easy-to-use, full-featured driver that has both a beginner and advanced mode. Like all Umax scanners, the 2400S also comes with a bundle of software for OCR and image file management. My complaints about the driver are few: When you zoom, it doesn't do a new preview, but only zooms the screen image. Also, you can zoom in, but you can't zoom out.

The Final Decision For those of you who are itching to break the 8.5 x 11 size barrier, this might be the scanner for you. It's capable of capturing tremendous detail, it's fast, and with the bundle of software it comes with, in addition to its venerable VistaScan driver, you'll find that the Astra 2400S is a pleasure to use.

— David Weiss

rating 4

$399, Umax
800-562-0311
www.umax.com

Fast, high resolution, can accommodate legal-sized paper, excellent software

"Auto-adjust" settings a bit too dark, can't use the magnifying glass to zoom out

A Phaser Set To Stun

The Phaser 740N, an Affordable Color Laser

By David Weiss

When choosing a printer, the choice has always been between speed and color. The monochrome lasers are fast, and because most of them are fluent in PostScript, Adobe's language for the production of smooth, consistent output, they're also highly accurate in reproducing your fonts, lines, and curves.

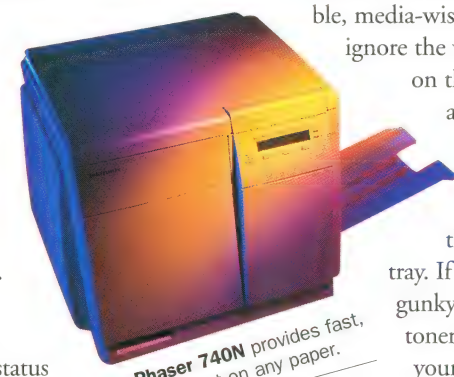
Inkjets, on the other hand, can produce near-photographic color output, but they take their sweet time delivering the goods, and most inkjet printers aren't familiar with PostScript right out of the box. Dye-sublimation printers produce even more stunning output, but they're even slower than inkjets. Lasers traditionally come with cassettes that can hold hundreds of pieces of paper, while most inkjets, and the dye-subs that are sold for home use, can only hold a slim stack of about 50 sheets.

So what about color laser? It's been an option, certainly, but not one that most of us can afford. A number of color lasers now list for over $3,000. But the prices of these wonders are coming down. Minolta is offering one for $2,399, and a company called iTec is advertising one for $2,199. We took a look at the Phaser 740N, a color laser from Tektronix, makers of high-end printers for corporate environments, which goes for $1,999.

The Mighty Tektronix

The first thing that struck me about the Phaser 740N is how incredibly well-made it is, for a device that costs around $2,000. To accommodate the four color toner cartridges, it's large and square, looking more like a small refrigerator than a printer. But it ends up taking up only about an 18-inch x 18-inch footprint, so it fits easily on a table in a small office. Doors open and close with spring-loaded catches. The toner cartridges slide in as easily as floppy disks. Pop open the main front door, and its innards look more like those of a copy machine, with clearly marked, bright plastic handles for servicing its various parts. A glossy user guide fits into a pocket of the door. It comes with one cassette tray that can hold up to about 250 pieces of paper.

The Phaser sports an LCD panel on the front, which provides you with status information, and it also provides a series of buttons with which you can navigate through a series of menus for extremely detailed information, and print status reports on the state of the toner cartridges and other media within the printer.



The Phaser 740N provides fast, brilliant output on any paper.

Media Blitz

One important difference between color lasers and other color printers such as inkjets and dye-subs, is that they don't need special paper in order to achieve the best results. It can print on regular old copier bond paper, and the output will still look smashing. You can also print on glossy paper if you like, and the resulting printout will look brighter because of the paper, but the look of the ink will be the same; it doesn't bleed or smear.

So, in terms of media, your biggest concern with a color laser is with the toner cartridges. They cost a little over $500 for a set of four (Cyan, Magenta, Yellow, and Black), and they have an expected yield of about 5,000 prints. But the printer has other elements which need to be replaced, though not nearly as often. These are the imaging unit, the fuser, the transfer kit, the main charge grid, and the fuser roll. These items are not replaceable in most laser printers, probably because they're not designed to last as long as the Phaser is. The only thing that can get you into trouble, media-wise, is if you ignore the warning labels on the glossy paper and put it into the cassette rather than in the manual feed tray. If you do this, gunky streaks of toner will besmirch your output for 20 or 30 subsequent prints, before it gradually returns to normal. And you have to set the glossy paper in three places: a switch in the back, in the LCD control panel, and in the print dialog box on your Mac. And if you slip up, it won't warn you. It would be nice if, like some of the Epson inkjets and Alps dye-subs, it told you politely that you've screwed up the paper situation.

Here's Looking at You, Kid

In terms of output, as one would expect, it rendered some extremely sharp text. When printing black text, the Phaser 740N can print in 1200dpi, and the extra-fine resolution is clearly evident in fragile, 4-point italic type. When it prints in color, during which its resolution is 600 dpi, the output is stunning and bright. Especially sharp-looking are reports containing a lot of solid colors,

and Web pages, which contain a lot of primary colors. When printing high-resolution color photographs, the hues are bright, clear, and accurate, but the overall look is much coarser than that of the higher-end inkjets such as Epson's PhotoEX, which prints at 1,400dpi. The Phaser renders evenly spaced vertical lines, similar to the horizontal lines on a television screen, whenever it reproduces photographs or fine gradients. And although it handled very thin curved lines (half a point thin) with only minimal pixellation, unlike the PhotoEX, which showed clear pixellation with thin curves, the Phaser's curved lines sometimes showed tiny angles, like "elbows," throughout the course of the curve.

Petal to the Metal

The Phaser 740N is astonishing in the speed department. The Epson Stylus Color 850 is fairly quick for an inkjet, and it's capable of printing a single page from a certain QuarkXPress document that includes numerous fonts, lines, colors, and photographs, in a little less than five minutes. The Phaser 740N can print the entire eight-page document in 7 1/2 minutes, with an average speed of a little under a minute each page. And in terms of straight word processing with regular old black text, we found the Phaser to be a good 25% faster than the fastest monochromes at that same task, GCC Technologies' Elite 12/600, and NEC's StyleScript 870, both of which we reviewed in November, 1998.

Net Worth

To say that the Phaser 740N is "networkable" is an understatement. Not only does it support myriad protocols and interfaces, but you can also configure it with TCP/IP, using any Web browser. By means of the push-button controls and the LCD on the printer, you assign it an IP address, and then when you request that address with a Web browser, you'll get an extensive, thoughtfully designed control panel from which you can set preferences, issue commands, check on the state of the printer and its media, and print a selection of status reports. The benefit here is that if you're printing out 500 copies of a promotional brochure, you don't have to hang around and watch the printer. Better yet, you can even have the Phaser send you an e-mail if it runs out of paper or needs your help — Now when was the last time you got an e-mail from your printer?

Room for Growth

The Phaser 740N is one of many configurations that the Phaser 740 comes in, so it's easy to start cheap and build up as you see fit. The "color-capable" 740L is the monochrome version, which costs $1,500. Whereas the 740N comes with 32MB of RAM, you can install up to 128MB. The 740DX is the top of the line. It comes with the maximum RAM allotment, a duplex unit for double-sided printing, an additional paper tray, and an external hard disk. The 740DX can print color at 1,200dpi, and the difference is clearly evident. The vertical line pattern is gone, the gradients are proportionately smoother, as are curved lines, and it can provide this upgrade in quality while maintaining its incredible speed. But this configuration will set you back $4,500, so you might want to consider waiting until you get bought out by Disney before you go this route.

The Final Decision The Phaser 740N is one remarkable printer. Because of its sophisticated networking abilities, it will feel quite at home in a large corporation, but because of its speed, versatility, ease of use, and friendly price, it would be a tremendous asset for any home-based or small-scale business. And if you have a large, sprawling family, and you're looking for one sturdy printer to handle everyone's needs — from word processing to photographs — in a speedy, economical way, this could be your printer. MH

rating 🍎🍎🍎🍎

Phaser 740N

$1,999, Tektronix
800-835-9433
www.tektronix.com

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👎 **Grainy photographic output, doesn't warn you about improper media**

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MacHome

By John Poultney

Watching the Web Go By

Visit Exotic and Not-So-Exotic Lands with Web Cams

For all the talk about the Internet taking you someplace else in a "virtual" sense, you're still pretty much sitting in front of your computer when it comes to the physical part of the equation. There is help.

Web cameras won't change the unfortunate truth of your surroundings: half-consumed cans of orange soda strewn about, wrinkled T-shirts heaped carelessly at the foot of your thin futon, frenzied ants encircling the rim of your coffee cup. But in a very real sense, they *will* open up a window to another world. And whether that world is a beach in Hawaii, a coffee pot in England, or a parking lot in South Carolina, a visit to a Website with a live camera is a trip well worth the clicks.

Half Full or Half Empty?

The concept is simple, really. A video camera is hooked to a Web server, periodically updating the photos that are posted on the Web for all to see. The origins of this phenomenon are unclear, but some say the original was, and is, at the kitchen of the University of Cambridge computer lab in the U.K. Bleary-eyed researchers in the building would often climb several flights of stairs in search of coffee, only to have their hopes dashed upon arrival at the kitchenette by an empty pot.

To address this problem, a perceptive staffer named Quentin Stafford-Fraser, hooked up a spare video camera to the server, wrote some software, and put the image on the lab's network. "The image was only updated about three times a minute, but that was fine because the pot filled rather slowly," says Stafford-Fraser, "and it was only grayscale, which was also fine, because so was the coffee."

Grayscale coffee doesn't sound too appealing, but since the lab put its server on the Web, hundreds of thousands of surfers have viewed the image of the lab's coffee pot. For the vast majority, though, the lab is much too far to go for a fresh cup, even if the image shows a full pot.

Something for Everyone

The coffee cam started quite a trend. Today there are literally hundreds of Web cam sites, offering you views of just about anything imaginable. If you want to view a colony of naked mole rats (nightmarish, translucent, underground-dwelling mammals with big teeth), there's a cam for you. How's the weather in Cabo San Lucas, Mexico? The surf at Piha Beach, New Zealand? How's the Medical College of Toledo progressing? Are crowds massing in Red Square ... *again*? There's a cam for you.

And of course there are cams to cater to the people-watching interests. One such interesting case is JenniCam (www.jennicam.org — *not* .com). This site shows the apartment of a young woman named Jenni, updated once a minute, no matter what she's doing.

Antarctica, 1999: Who imagined it would look this inviting?

Jenni's following is big enough that she actually appeared on David Letterman, where she explained that the camera is meant to show merely what happens in her life. To Dave's inevitable question about intimacy shown on her site, she said demurely, "My intent is to show all of life, and ... you know, that's part of life too."

Many times vistors will only see an empty apartment, or Jenni merely sitting at her computer, folding her laundry, or eating pizza. But sometimes she

might be doing some modeling or enjoying her boyfriend's company. Just like real life, because it is.

Chip Clofine, a Web technical manager in San Francisco, says his ChipCam (www.braindump.com/chipcam) is designed to add a human quality to his Website. "Aside from giving my site a personal dimension, it's also an excercise in accountability. The Net lets you be anonymous, so people say whatever they want. This gives it a personal dimension, and makes me more accountable for telling the truth."

Practicalities

Many Web cams serve no practical purpose other than displaying images to the curious and idle. But there are many sites with a civic purpose. Say you live in a congested area like New York, and for some reason you drive to work. A check of the Brooklyn Bridge cams lets you know what to expect.

Or you're a biologist, and you want to check up on those peregrine falcon chicks without their mother attacking you with razor-sharp talons. *Nooo!* A Web cam placed near the nest will do the trick. Web cams can contribute to scientific research, opening up great possibilities for distributed studies, giving far-flung participants immediate, intimate views of animal or environmental scenes without the expense of a wide-area network.

Making Web cams even more useful are recent improvements that let users zoom in, pan the cameras, or even receive images only when an image changes (such as when motion is detected within a frame). The potential implications for science, entertainment, and security are staggering.

Go Forth and Watch Passively

Pretty soon now there'll be a Web cam for just about any conceivable location or activity. One of them might even be watching you right now, especially if you're in a public place. But don't let it get to you — despite the possibilities, there's little to suggest that cams are being used for covert surveillance purposes ... even though they could be. It's best not to think about it — just belly up to the Web and enjoy a virtual trip around the world.

A good way to get started is with a good, general-purpose Web cam directory, and the CamCity or EarthCam sites are hard to beat. Web cam search engines of sorts, these let you search by such factors as geographic region (all the big continents are represented here, including Antarctica — and there are several Web cams there), animals, weather, offices, and yes, traffic.

Selected Web Cam Sites

Directories:

CamCity: www.camcity.com
CamQuest: http://user.mc.net~dean1969/webcams.htm
Digital Camera Network: www.dcn.com
Spycams around the world: mpb.com/herb/spycams.html
EarthCam (like Yahoo, but for Web cams): www.earthcam.net

Some Actual Web cam sites:

Cambridge University Coffee Cam: www.cl.cam.ac.uk/coffee/coffee.html
KremlinKam: www.kremlinkam.com
WolfCam (a wolf compound in Idaho): www.nidlink.com/~ugholl/pages/wc2.html
Naked Mole-Rat Cam: www.si.edu/organiza/museums/zoo/highlights/webcams/molerat1/nmcam.htm
Davis Station, Antarctica: www.antdiv.gov.au/aad/exop/sfo/davis/video.html
Panama Canal Cam: www.pancanal.com/photo/camera-java.html
Brooklyn Bridge Web cam: www.romdog.com/bridge/brooklyn.html
TaxiCam (pictures of people riding in a taxi in Aspen, Colorado): www.ultimatetaxi.com
San Francisco Bay Bridge: www.ikonic.com/ikonia/bbridge.asp
Puppycam (puppies frolick before the camera; updates every two seconds): www.sofla.com/content/just/webcams/puppy/en/index.html

Setting up Your Own Web Cam

You're no doubt wondering, "How can I get in on this Web cam action?" Well, it's simple. If you have a Website running, here's what else you'll need:

Dedicated Video Camera: This can be a regular video camera — one with composite or S-video out — but you can only use this type of camera if your Mac sports video input. A better bet is the Connectix/Logitech QuickCam, which hooks to your Mac's serial port (a USB version, the QuickCam VC, is available for iMacs).

Video-capable Mac: A color QuickCam will work with any '040 or PowerPC Mac; just plug it into a serial port. If you have a grayscale QuickCam (now discontinued), you'll be able to use an '030-based Mac such as a trusty SE/30. If you're using a regular video camera you'll need an AV-model Mac such as the Centris or Quadra 660av, Quadra 840av, Power Mac 7500 and 8500, or any other system with built-in or added video-digitizing hardware.

Video-capture software: This is the software you will need to make your camera take images and transfer them to the server:

MacWebCam, $35
www.csl.sony.co.jp/person/rekimoto/macwebcam.html

SiteCam, $129
www.rearden.com/sitecam/

Timed Video Grabber, free
www.avernus.com/~allon/TVG.html

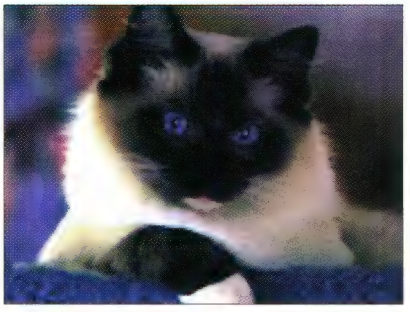
WebCam Turbo, WebCam Too, both free
webcam.paperjet.com/files/index.html

Oculus, $20
www.intlweb.com/Oculus2/index.html

By John Poultney

Release the Hounds

Adopting Animals Online



Ever since we ran out of food and water on an expedition to Annapurna and subsequently were dragged by a large and slobbery St. Bernard to the safety of a mountain village, where we were nursed back to health with tea, biscuits, and canned tuna, Bookmarks has maintained a soft, cushiony spot on our person for members of the animal kingdom.

Imagine our pleasure, then, to discover that the Web is a treasure trove of resources for the animal lover in all of us. Whether your beast of choice is a yak, iguana, dog, cat, budgie, or even a pranksterish spider monkey, an Internet connection is indeed your bridge to the phylum next door. And in case you're big-hearted enough to take a creature in, many sites provide all the information you need for adoption.

Take the Feral Cat Coalition, for example. Whatever your feelings about cats rifling through your trash late at night and waking you up with unearthly shrieks, you'll have to admit that this organization takes a balanced approach to the situation. The site has articles on obtaining humane traps, raising orphan kittens, and setting up vaccination, spay/neuter, and shelter programs.

Feral Cat Coalition, www.feralcat.com

Ferreted Out

Though cats and dogs are still the hands-down favorite pets of most citizens, there exists a diehard "alternative" contingent that values other types of furry creatures more than the old standbys. Bookmarks does not know nor seeks to question whether such preferences are meant to be a statement about individuality or a blow against the establishment, or whether they are merely an affectation for the bizarre. We only know that whatever your pet preference, it seems there is a corresponding Website.

Say you'd like to own the mischievous, endearing, and sometimes illegal ferret. Or a hippie acquaintance has asked you to look after such an animal while he or she helps a friend move to Boulder. Ferret Central has assembled a voluminous site that will help you with all kinds of ferret issues. It discusses everything from ferret adoption sources to information on nutrition, spaying/neutering, declawing, weight control, and the aforementioned legality problem in a straightforward, mature, and elucidating manner. Should you suspect that a ferret is in your future, visit this site with all speed.

Ferret Central, www.ferretcentral.org

Rescue Me

The Web has indeed gone to the dogs. And these charming beasts can be yours with a few carefully placed mouse clicks and strategically dialed phone numbers. The Planet Pets Pet Rescue Page has copious links to

dog (and other pets) rescue and adoption agencies, as well as to message boards and other resources for those of you wanting to open your homes to warm and fuzzy guests.

Most animal adoptions and rescues take place locally, so you may need to search for sites that list animals available in your area. However, this site makes an excellent starting point, as it lists pet sites by breed and then by agency location if there's more than one agency for the breed. Here you'll find links to sites dedicated to such dog breeds as beagles, golden retrievers, English bulldogs, border collies, shelties, Welsh corgis, shar-peis, cavalier King Charles spaniels, Rhodesian ridgebacks, and the dreaded giant schnauzer.

As an added bonus, Planet Pets discourages participation by profiteering commercial breeders, instead devoting itself to simply finding homes for these challenging yet adorable beasts. Bookmarks says, "Mush!"

Planet Pets Pet Rescue Page, http://planetpets.simplenet.com/petrescu.htm

Planet Pets main site, http://planetpets.simplenet.com

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By Cathy Lu

Products for Equal Access

Technology for the Disabled Lends a Helping Hand

"Fifteen percent of the population has a disability," says Lisa Wahl, executive director of the Center for Accessible Technology in Berkeley, California. "Everyone talks about the pros and cons of computers and education, but wherever you stand on that issue, if you can't hold a pencil to write and you can't turn the pages to read, then technology — a computer — is the only way."

Housed in what could easily be mistaken for an abandoned warehouse, the Center for Accessible Technology is one of a number of organizations dedicated to helping people with disabililties claim a spot in the technological revolution. This group illustrates that the options, computer-wise, are wide for such users.

Home to about 15 Macs, the center uses specialized software, funkily shaped keyboards, oversized trackballs, and other odd-looking devices that bring assistive technology to hundreds of users. There's also a handful of PCs to accommodate the hardware and software that aren't available for the Mac — although Wahl is a firm advocate of the Mac for the center's purposes because of its plug-and-play ease. It's important to her that the technology is accessible to everyone. "It's a human rights issue," Wahl says.

One look around the center reveals solutions for just about every need. There's a giant green trackball for those with motor problems; a flat membrane QWERTY keyboard with oversized, colored buttons for users who are unable to operate a regular keyboard; even a head-pointing mouse for those who can't use a regular mouse.

In fact, most people with impairments can find something to help them operate a Mac independently, says Gigi Whitford, one of the 10 specialists at the center. "If you can only move your head, you can use a head mouse. If you can only use your foot, it can be a foot mouse," she said. "If you have lost your vision or only have partial use of your vision, you can use a screen reader."

Really, the only people who are restricted in their access to technology, says Wahl, are those who are held back by their own bodies. "If you can voluntarily activate any muscle, you can operate a computer. But if you can't — if you have cerebral palsy or ALS [Lou Gherig's Disease] — and can't consistently activate your muscle, then you need something to read your brain waves."

Such devices don't really exist, but the choices are wide for many users, as technology and computers provide a window to an otherwise harder-to-reach world. And as we've seen from Stephen Hawking, physical impediments don't preclude accomplishment. In his highly specialized research, Hawking uses an elaborate, custom system that helps him select entire words and phrases as well as individual letters. But there are more general-purpose systems readily available.

Keyboards, Switches, and Head Pointers Too

The Center for Accessible Technology was born 16 years ago from the needs of a seven-year-old girl named Judith who wasn't able to hold a pencil. When Judith's parents saw the wealth of technology that was being introduced, they wondered why they weren't seeing anything that would help their daughter. They decided to organize a community meeting in Berkeley to talk about alternatives for people with disabilities and from there, the center was founded.

The ATA's mission, according to Program Director Russ Holland, is "to connect people with disabilities to technology tools." While assistive technology is advancing gradually, it isn't progressing as quickly as Holland would like. What's holding the industry back, though, is not technology itself, but big business obsession with the bottom line. "[Assistive technology] is perceived as a relatively small niche market," says Holland. "The investment going into it isn't the same as that going into Windows 2000."

Still, there is a small contingent dedicated to the needs of people with disabilities, both physical and cognitive. One company is Illinois-based Don Johnston, which has been developing assistive technology for Apple since the early '80s.

Don Johnston makes everything from software for people with learning disabilities to hardware that allows a quadriplegic to operate a computer on his own. The company's Discover line of special keyboards and switches is an example of the latter. Switches are especially useful for people who either have motor difficulties or suffer from paralysis. They function like light switches: Users press an oversized button — with anything from their chins to their feet — to activate and deactivate functions on the Mac. Switch software places keyboard and mouse functions onscreen and highlights sections of the keyboard until users hit the switch to indicate the next action.

Head-controlled devices like the HeadMaster or Tracker are another option for severely disabled users. People who have severe spinal cord injuries and are paralyzed from the neck down benefit greatly from this technology that uses a box on top of the monitor to track head motions and translate them into cursor movements. A puff switch on the headset takes the place of a mouse click — users merely blow air into the switch to indicate a selection. And head-controlled devices work with onscreen keyboards, so users can do anything, from writing a letter to surfing the Web.

IntelliKeys is a popular flat membrane keyboard that uses overlays for control functions. Usually these feature large keys in configurations addressing a specific disability. If children have difficulty

Talk to Me

Text to speech conversion, as well as speech-recognition command and control (controlling the computer through spoken commands), have been around since the Dark Ages of the Mac, but they weren't always as sophisticated or easily available as they are now. But MacInTalk, Apple's proprietary speech application, has long been included with the system software.

MacInTalk includes truly useful functions such as Speakable Items, which allows users to command their Mac to perform certain tasks such as launching Microsoft Word, closing down a Web browser, or sending an e-mail. The software ships with more than 60 commands already programmed, and users can employ AppleScript to program a number of other commands. System 8.5 features some cosmetic speech improvements, such as a new technology that synthesizes voices in a more natural tone than previous efforts.

These features are all a step in the right direction toward providing seamless integration between computer and user, but really, what many people are waiting for is the ability to talk to their Mac and have it translate their words to text on the fly.

Actor Christopher Reeve uses DragonDictate to e-mail, fax, word process, make phone calls, and browse the Web, all by speaking the words he wants to appear on the screen. Unfortunately, DragonDictate is PC-only, and the current state of Macintosh dictation software can only be described as pathetic. While there is a hearty supply of speech recognition software for the PC, there is a blatant shortage of the same for the Mac.

What little the Mac had, in the form of PowerSecretary, was discontinued when Dragon Systems, the makers of DragonDictate, decided to discontinue the PowerSecretary line a year ago due to lack of demand. At this time, Dragon has no plans to introduce a new software Mac line. However, a British company called One Stop has just introduced Voice Power Pro, a dictation speech recognition application for the Mac.

Another group that might well come through on this front, though, is MacSpeech (www.macspeech.com), a fledgling company dedicated to bringing Mac speech recognition technology up to par with the Wintel world. Currently, the company has its technical team in place, including several people who worked on PowerSecretary, but is in need of additional funding. MacSpeech's Website has good information on the state of Mac speech-recognition.

Despite some good signs, many people in the industry are less than excited by the prospects. Most of them claim that the results fall short of expectation and that the level of training involved, in terms of teaching the software to understand personal voice inflections, is too rigorous. "The success of dictation depends on whether the system has been trained on the particular topic domain [i.e.: medical terminology, business lingo, etc.] that you want to dictate about," says Kim Silverman, manager of the spoken language group at Apple. "To train it takes millions of words, and that's more text than any one person could collect."

And even then, says Center for Accessible Technology's Lisa Wahl, the software's becoming less disability-friendly. "If your speech differs from normal, it may be harder for you to use the product ... It's becoming more difficult for people with disabilities to use the product and easier for everybody else."

So when it comes to having a conversation with your Mac, well, we're not quite there yet. But with every incarnation of the Mac operating system, we're getting closer to the day when you might be able to chuck your keyboard right out the window.

with the alphabet, the big, inviting buttons make learning a more welcoming option. If a person suffers from a motor disability, the larger keys become an easier target for difficult-to-control fingers.

And what of options for the blind? For Tom Wlodkowski, a visually impaired project manager at the National Center for Accessible Media in Boston, the key is Alva Access Group's OutSPOKEN, a program that both reads text aloud using Apple's PlainTalk and lets a blind person navigate primarily with a keyboard instead of a mouse, which requires more visual interaction. OutSPOKEN is often used with inLARGE, an application that allows those with vision problems to magnify the screen up to 16 times. Most of the 9.7 million visually impaired Americans over age 15 have some usable eyesight, and Wlodkowski thinks some may find combining screen readers and magnifying software useful.

There are also special Braille overlays that can be customized to users' keyboards. However, Mac options are limited for experienced Braille readers. Braille displays, which translate text into Braille using electromechanical systems of raised pins, are expensive, and currently only available to PC users. Software drivers would be needed to get these to work with Macs, and the potential market isn't that large. However, Alva says Apple's recent recovery is causing the company to rethink its product strategy, so it may add support for more Braille devices into its product line.

The dearth of products for blind Mac users is an interesting case. It's not because of the relative sizes of the Mac vs. Windows markets, says Wlodkowski, but rather because Windows piggybacked on DOS, which was a text-based operating system. The Mac has always been a graphical system, and it's much easier to translate text than graphics to Braille.

Duxbury Systems' Braille Translator translates text files into Braille, and prints them with embossers, which produce the raised dots used by Braille readers. The software supports various foreign languages and works with the latest Mac OS and all word processors.

OCR (Optical Character Recognition) for Braille texts is another technology eluding the Mac at the moment, but Duxbury's Neal Kumiansky says most users want to print documents for reading, rather than uploading them to the computer. OCR would obviously expand the options for the visually impaired, but Kumiansky says it's a complex proposition. "Braille's not really a font," he said. "It's more of a language, and symbols can mean entire words or concepts in certain contexts, so it's not as easy as converting letters."

Braille note-takers — portable devices such as the Braille n' Speak from Blazie Engineering — let users enter text and then transfer it to a computer or printer, or replay it using synthesized speech. Blazie also makes embosser printers.

People with disabilities, though not a large part of the market, have quite a few options. Thanks to these companies and organizations, these users need not miss out on the technological changes the rest of us take for granted.

Product Information

Word Processing Aids:
Co:Writer
$290, Don Johnston
800-999-4660, www.donjohnston.com

IntelliTalk
$40, IntelliTools
800-899-6687, www.intellitools.com

Write:OutLoud
$99, Don Johnston
800.999.4660, www.donjohnston.com

Braille and Visual Aids:
Braille Dots (Braille keyboard labels)
$20, Hooleon
800-937-1337, hooleon.com

Duxbury Braille Translator
$645, Duxbury Systems
978-692-3000
www.duxburysystems.com
(Website also lists Braille embosser manfacturers, other resources)

inLARGE (magnification software)
$295, Alva Access Group
510-923-6280, www.aagi.com

OutSPOKEN (screen reading software)
$695, Alva Access Group
510-923-6280, www.aagi.com

Overlay Maker (for customizing a Braille overlay to work with IntelliKeys)
$70, IntelliTools
800-899-6687, www.intellitools.com

Braille n' Speak (Braille note-taker)
Blazer (Braille Embosser)
$1,400, Blazie Engineering
410-893-9333
www.blazie.com

Keyboards:
Discover:Board
$499, Don Johnston
800-999-4660, www.donjohnston.com

IntelliKeys
$395, IntelliTools
800-899-6687, www.intellitools.com

Mouse Substitutes:
HeadMaster Plus (head-controlled)
$995, Prentke Romich
330-262-1984, www.prentrom.com

HeadMouse (head-controlled)
$2,000, Origin Instruments
972-606-8740, www.orin.com

Tracker 2000 (head-controlled)
$1,895, Madenta Communications
800-661-8406, www.madenta.com

NoHands Mouse (foot-controlled)
$250, Hunter Digital
310-476-1874, www.footmouse.com

Speech Recognition:
SurfTalk (voice command for surfing)
$15, Digital Dreams
510-547-6929, www.surftalk.com

Voice Power Pro (dictation software)
176 £ (about $120), One Stop
44-181-939-8000
www.onestopdirect.co.uk

Switches:
Big Red or Jelly Bean Switch
$42 each, AbleNet
800-322-0956, www.ablenetinc.com

Discover:Switch
$399, Don Johnston
800-999-4660, www.donjohnston.com

Other Resources

Alliance for Technology Access
San Rafael, California
415-455-4575, www.ataccess.org

Center for Accessible Technology
Berkeley, California
510-841-3224, www.el.net/CAT

Maxi-Aids catalog (various products)
800-522-6294
www.maxi-aids.com

For more product information go to www.guide.apple.com

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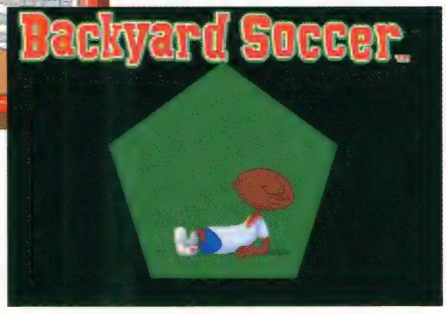
Backyard Soccer

$20, Humongous Entertainment
800-499-8386
www.humongous.com
Ages 5 to 10
Power PC Required

Backyard Soccer markets itself to a multiethnic crowd, both genders, and even a physically challenged population. Although the look and feel is contemporary, there is a certain polished-up-early-Atari-game feel to the program. *Backyard Soccer* is fun. It offers statistics, strategies, and several levels of play. But the truth is, the program gets redundant pretty quickly, and, in many ways, the player selection process is more exciting, challenging, and interactive than the actual game.

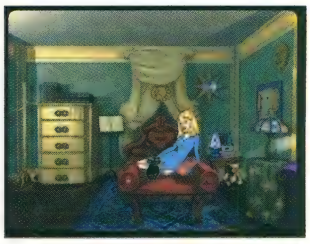
The main menu boasts of a variety of options, levels, and features. A player can decide to select his or her team members by reviewing their personality traits and physical appearance. In addition, the young contender can determine the positions the players will occupy on the field, how aggressive their strategy should be, and the venue where the game should be played (playground, cement garden, etc.) Or the player also has the option to begin the game immediately, skipping the planning stages and allowing the program to select locale and team members.



Either way, once the soccer action begins, the mouse allows the player to pass and kick the ball, and shoot a goal. That is, if you can master the system of movement, which isn't easy. It's not intuitive, and the directions are in the manual, not onscreen. Defense options are pretty limited; the program, not the player, ultimately controls those moves. Practicing penalty kicks or playing goalie can be fun, although the "game chatter" offered by the kicker gets tedious in about five seconds — as do many of the verbal exchanges between the sports commentators, Sunny Day and Earl Gray.

Backyard Soccer does an excellent job of representing all kinds of kids who might play soccer and can identify with the game. Its multicultural perspective is impressive and comprehensive. However, it is the kind of game that a child who really loves soccer would probably grow tired of quickly.

— Lila Leff



Sabrina the Teenage Witch: Spellbound

$30, Knowledge Adventure/Simon & Schuster
800-457-8357
www.knowledgeadventure.com
Ages 8 to 12
PowerPC Required

It didn't take a crystal ball to figure out that witchcraft and humor make a good backdrop for fun. Echoing the campy humor of the TV show, the *Sabrina the Teenage Witch* CD-ROM lets kids use their own wacky witchcraft to earn an official witch's license.

Not one but seven times, Sabrina miscasts a spell, and it's up to kids to find the spell ingredients in a scavenger-hunt type activity with a twist. They also have to use magic tools to get the necessary objects; for instance, kids can use the crazy camera clone tool to duplicate Salem, or they can use magic drops to snatch that snob Libby's headband. If kids choose the wrong magic tool, they're supposed to get sent to the Realm, but this didn't always happen to me.

In the Realm, kids must win a game, such as a variant of Hangman or the Dating Game, to return to their ingredient hunting.

Unfortunately, this excellent concept, coupled with the real character voices from the TV show, is hampered by slow load times as you move from room to room, and occasional sound glitches. Much of the disc is repetitive, with the intros to each of the adventures varying only slightly, and the hotspots throughout the house unchanging. There's not much replay value either.

Young Sabrina fans will enjoy this CD (briefly), but others will find it less than spell-binding.

— Carrie Shepherd

Paint 'n Play Pony

$20, IBM Brings You Crayola Software
800-508-1496
www.ibm.com/pc/us/software
Ages 5 to 10

Girls and horses in the media go back so far that even the cliché has become cliché.

To an adult, Crayola's *Paint 'n Play Pony* might seem like a bankable snoozefest. Activities include coloring and decorating a horse; dressing it up in funny hats; feeding, washing, and grooming; styling the horse's hair; writing stories; and creating printable crafts. But to a child who loves horses, we're talking kid in a candy shop.

The interface should be easy enough for a five-year-old user to manage without a problem. Penelope Pig, nestled on a picnic blanket and flanked by horses, ponies, and a flying unicorn, introduces you to the activities listed above. You can also jump to a special section on celebrity horses, though younger kids may need to have their parents on hand to read them the text.

I asked a seven-year-old software expert what she thought of *Paint 'n Play Pony* on a scale of one to ten. She gave it a 105.

— Anne Marie Feld

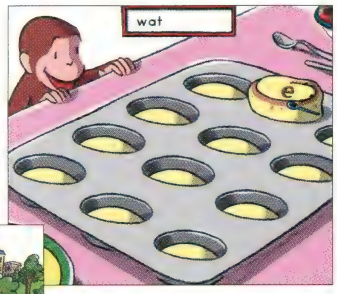
Curious George Reads, Writes, & Spells for Grades 1 & 2

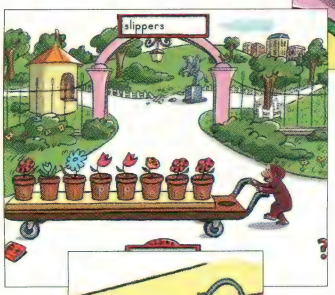
$20, Houghton Mifflin Interactive
800-829-7962
www.hminet.com
Ages 6 to 8

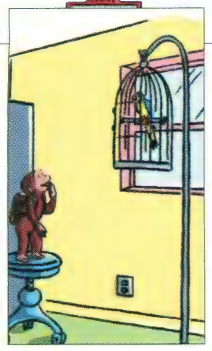
Curious George, that generation-spanning animated primate, notorious for wreaking havoc, has let Lola, a talking parrot on the brink of fame, escape from her cage. It is your job to catch up with Lola and help put things right.

In the CD-ROM, *Curious George Reads, Writes, & Spells for Grades 1 & 2*, George's impulsive inquisitiveness is explored in story format. A friendly-voiced narrator recites 12 illustrated "episodes," plucked from two original Curious George tales. I say "recited," and not "read," because unfortunately no text appears. Although this recitation denies kids the opportunity to follow along, the narrated episodes are followed by activities that focus on spelling and sentence completion, and that's where the learning comes in.

For instance, when George tears after Lola through a gardener's lot, causing a seed-scramble, you must put the flowerpots back in order. In doing so, you will unwittingly







spell words with the short "o" sound. It is easy and fun to lift the correctly lettered pots and put them in the wagon, and similarly, in a later activity, to grab the alphabetically accurate donuts as they rise from their muffin pans. My favorite lesson takes place in an ice-cream factory where, if you choose the wrong cake, it falls and squashes on the floor. The alphabetically challenged are sure to cause a real mess, so to prevent younger children from getting too discouraged, parents can adjust the level of play.

Though the software is entertaining, and you receive a nifty, personalized certificate as you exit, plot problems undermine the overall quality. The story's objective — to get Lola discovered — is dropped (not unlike the "e" before "-ing"). Sentence-completion sub-plots are in direct conflict with the narrative, and worst of all, the creators abandon a second storyline before its climax.

When kids realize that their spelling efforts are in vain — that they won't ever catch Lola, nor secure her celebrity — they may just stop being curious about Curious George.

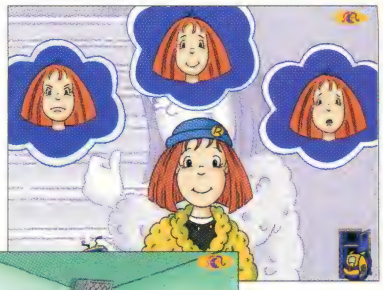
— Amy Shafron

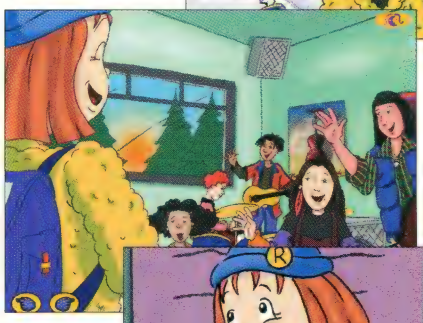
Rockett's Secret Invitation

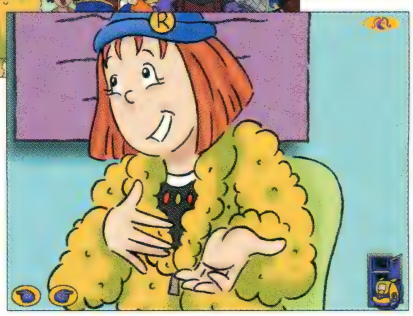
$30, Purple Moon Software
888-278-7753
www.purple-moon.com
Ages 8 to 12

It's all about choices. Purple Moon's *Rockett's Secret Invitation* resides on the slippery slope of decision-making and effect in the world of human emotions. To borrow a phrase from gaming, this title is a strategy RPG (role-playing game), only the arena isn't the world as battlefield, as in *Myth* or *Imperialism* — its battles are fought out in the halls of a suburban junior high school.

There's a straightforward story line: Rockett receives an invitation to join an exclusive all-girls club, but there's a secret lurking in her past that has the potential to compromise her standing. Familiar characters return from the *Rockett* series such as Miko, Dana, and Nikeili. In a manner that will be familiar to *Rockett* veterans, the user guides our heroine through a series of turning points, making multiple-choice decisions about her actions. There's a simple moral to the story: Honesty is the best policy — but the story can be played out a number of ways to different conclusions.







From an educational standpoint, we're talking about schooling in the realm of emotional intelligence only. From an artistic standpoint, the software has that familiar Purple Moon feeling: soft-edged characters, short animated sequences interspersed between lots of evolving still frames, and multiple-choice scenarios. Slang often sounds slightly off, such as the slam, "Get behind yourself." Somehow in this context, it has a wince-inducing effect — like having your date arrive in Dolphin shorts and tube socks pulled up to his knees.

Is the drama spectacular? Does Rockett experience an epiphany that changes her? Well, not exactly, and for many, the world of Whistling Pines Junior High School may seem a little confined, but Rockett's lamentation, "I feel like I don't fit in anywhere," will probably strike a chord with many, if not all junior high school age girls. Spending some time with *Rockett's Secret Invitation* is not unlike playing dress-up with decisions, and might be a boon for shy girls, or those looking to better navigate the sometimes difficult hallways of their own junior high schools.

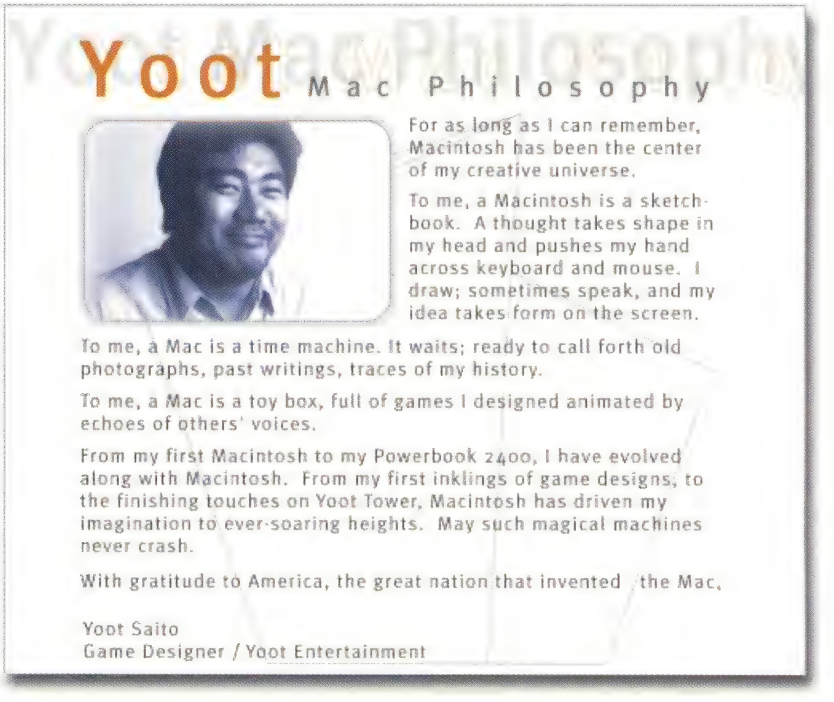
— Anne Marie Feld

By Anne Marie Feld

Creation Story

Yoot Saito and the Never-Ending Game

A lover of Lego, a friend to Timothy Leary, and a devotee of the Macintosh, Yoot Saito, creator of *Yoot Tower* and *SimTower*, speaks out on the art of the simulation game, the current state of Apple, and his latest coup: getting Sega PC to release its first-ever game for the Macintosh. Built on the Codie Award-winning, million-plus-selling *SimTower* engine, *Yoot Tower* has three locations (Tokyo, Kegon Falls, and Waikiki), enhanced artificial intelligence, stress-meters, and a simple objective: Give the people what they want.



Tell us about *Yoot Tower*.

I'm not interested in games with such concepts as scoring, game over, endings, clearing levels, etc. I make games without end, which become part of the user's life. Something that, in the same way as a word processor or network software, stays on the hard disk for years.

As a kid, I was a big fan of Lego. Later, when the windmill and the wheel were put out, the fun of Lego was never-ending. So rather than having scores and "game over," being able to extend and expand the game is my intention.

What I expect most from Apple right now are not games

Using the *SimTower* simulation engine, I want to offer a variety of building construction kits in a manner similar to Lego. You can say it is the appeal of an extendible game. Defining the functions of the main game required me to anticipate all the possible functions that would be needed in the future. That was really tough.

How do you explain the phenomenal success of *SimTower*?

Unlike role-playing games or adventure games with a linear story, the challenge of *SimTower* is the simulation model of people and how to treat them. There is no specific hero. By setting the movements of the elevators, we succeeded in

showing the natural reactions of people. It is generally thought that the building is the main character of *SimTower*, but ultimately it is the residents themselves. They are what bring about the excitement in the simulation.

Was it hard to get Sega to agree to Mac first for *Yoot Tower*?

In America, much more so than in Japan, there is a lot of skepticism toward the Mac market. That was a very difficult point from a marketing angle.

In 1992 you released *Zaibatsu Ginko*, a Monopoly-like strategy game. How did you become interested in sims?

I did not have a lot of interest in action or shooting games. However, when I first saw *SimCity*, I thought that it was a very smart method of expression. So when Maxis released *Tower* in America and Europe as *SimTower* it was a big honor for me.

Tell us about the Macintosh Museum that you established.

This was not a permanent thing. My collection itself is for some reason called the Macintosh Museum. In 1992 with the help of Apple Japan, I held an exhibition of my entire collection in a gallery in Tokyo. I was trying to show the progress of the user interface from the Alto — the original prototype by Xerox's Palo Alto Research Center — to the latest user interface. It was just done as a hobby.

In 1993, you released Timothy Leary's experimental CD-ROM, *Sunbrok Drive*. What was working with Leary like?

When I was much younger, Timothy invited me to his house a number of times. Sometimes I spent the night. His house was filled with the art of Keith Haring. Staying at his house, every day I was introduced to a large number of other guests. Spending my days in this way I received my education on America.

Just before he passed away, I paid him a visit. After he heard about my arrival, I could hear that familiar voice shouting, "YOOT! YOOT!" His entourage let me in. When I entered the room he propped himself up in his bed and said, "Take a picture!" to a cameraman nearby. Although he was emaciated, his eyes still twinkled with life.

A few days later when I returned to Berkeley, I received a call from Timothy's lawyer, George, informing me that Timothy was no more. It was a shock. The photograph from that day can still be seen in my office.

What do you think of the iMac as a gaming machine?

Apart from having expanded the Mac market, I don't think there is anything especially new and different about the iMac.

But it seems like promoting the Macintosh has become something of a quest for you, or a symbol for something other than just a computer.

Macintosh is more than the name of a computer, it is a way of thinking. Apple is a unique R&D company, and I am experiencing their R&D together with them.

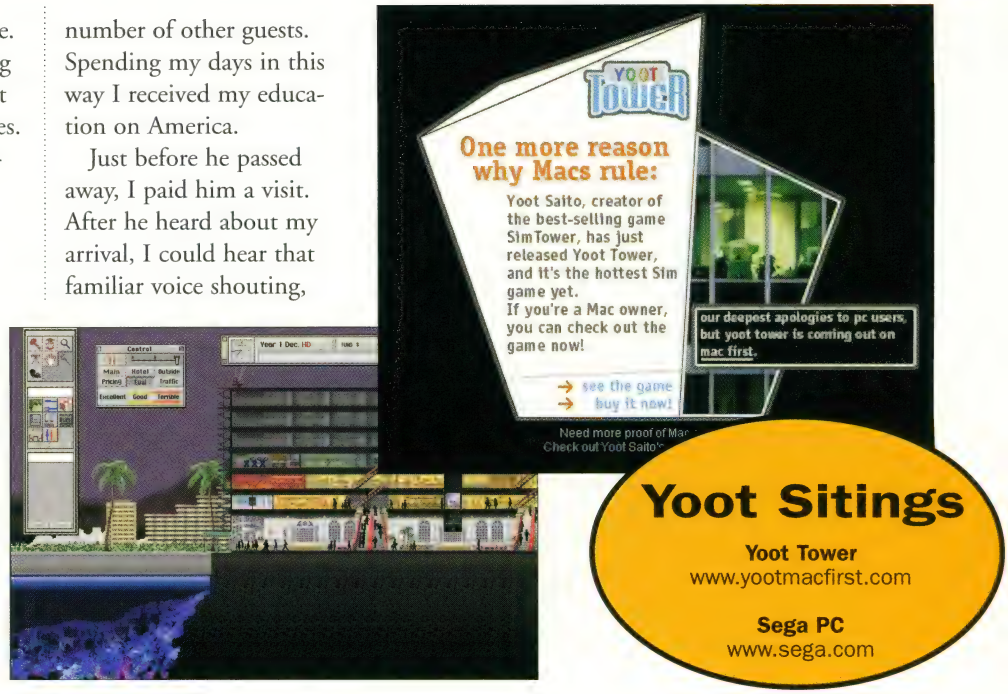
The fax modem, QuickTime, CD-ROM, and other technologies that are now taken for granted all began on the Mac. For the ordinary computer user Apple resembles the MIT Media Lab. Recently this has changed a little though.

What would you like to see Apple do, in terms of expanding the Macintosh gaming market?

What I expect most from Apple right now are not games but more progress in the state of the art of computing itself. Since 1984, computer interfaces have not progressed.

If you could tell one thing to Steve Jobs, what would it be?

I once read an article by a president of Honda. In it he said that not being a founder, he wasn't allowed to decide on the truly risky choices where bankruptcy was a possibility. Only Soichiro Honda could do that. Deciding a big change always threatens the present situation of a business. Still, it has to be done. Only Mr. Jobs has a right to do it, because nobody else on earth does.



Win a 3D Accelerator Card

We're talking cream puff. We're talking a 3Dfx Voodoo 2 chipset, 50 billion operations per second, 90 million dual-textured, bilinear-filtered, per-pixel-MIP-mapped, alpha-blended, Z-buffered pixels per second. In English, we're talking an excellent 3-D gaming card. And we're talking the low, low price of FREE. Micro Conversions and *MacHome* are giving away a 12MB Game Wizard Voodoo 2 video card for the Mac. We were going to have you measure the diameter of Steve Jobs's bald spot, but sources at Apple discouraged us, so all you have to do is tell us what you think Apple needs to do in the coming year to ensure the company's continued success, in 25 words or less. Be creative! Mail responses to *MacHome*/Micro Convert Me, 703 Market St., Suite 535, San Francisco, CA 94103. The winner will be picked at random. Contest expires on April 31. For more details on the card, check out the Micro Conversions Website.

www.microconversions.com

PlayStation's Mac Invasion

Things look interesting for Connectix, which made a big splash at January's Macworld Expo with its Sony PlayStation emulation software, Virtual Game Station (see Entertainment Reviews for the full-on skinny). The latest word is that Sony has filed suit for intellectual property predation. However, rumors have been flying that the technology may be bought by our friends in Cupertino, Apple, which has a cozy relationship with Sony.

Connectix, 650-571-5100, www.connectix.com

Nightfall Forsakes Blood, Gore

***Nightfall*, a new exploration game from Altor** Systems, hit the shelves earlier this year. Based on Ancient Egyptian culture, users explore tunnels and rooms while solving puzzles. Altor, based in Palo Alto, CA, favors a "less gore is more" approach, and is attempting to "turn the tide of high-tech violence" by peddling its 3D engine, which focuses on learning and empathy. It's hoping that this will facilitate the making of more non-violent interactive games, but if the overwhelming success of *Quake* or *Unreal* is any indication, you might want to hold off on buying that Altor Stock.

A cautionary note: Some Mac users have had difficulty saving *Nightfall* games — if you're one of them, simply copy the saved game from the CD onto your hard disk. Run the game, and from within it, open the saved game on your hard disk. You should then be able to proceed into *Nightfall*, the land that violence forgot.

Altor Systems, 650-321-1416, www.altorsys.com

WarBirds WarBirds, Whatcha Gonna Do

The recent release of Interactive Magic's *WarBirds 2.5*, an online-only WWII air-combat simulation, features the ability to capture enemy bases with para-troopers discharged from transport planes. And in the new version players can compete for awards (credit toward time on IMagic Online).

IMagic, www.imagiconline.com

Pick A Card

More card news: ixMicro was to have shipped its new Game Rocket in early March. Priced in the neighborhood of $300, the card boasts 16MB of video RAM, and supports Glide, Rave, and Open GL, using a 3Dfx Voodoo Banshee chipset. Screamy.

ixMicro, 888-467-8282
www.ixmicro.com

Game After Game

There's a lot happening in the Macintosh gaming world ... new titles are being announced left and right. From Mindscape, look for *Creatures 2* and *Imperialism 2* — both promise to be really cool. MacSoft has a new solitaire offering — *America's Greatest Solitaire Games* (37 in all). Terminal Reality is close to release on its port of Microsoft's flight sim, *FLY!* From Double Aught, the people who made *Marathon Infinity*, look for a new release, *Duality*, in the coming months — it's a first-person shooter promising a story-driven (rather than bullet-riddled) experience. Hmmm.

Mindscape, 415-895-2000
www.mindscape.com
Terminal Reality, 972-221-2059
www.terminalreality.com
MacSoft, 800-229-2714
www.gtinteractive.com/macsoft
Double Aught, 718-782-6842
www.duality.net

MICROPROSE
www.microprose.com
westlake INTERACTIVE

Available soon at your local retailer, or visit the GT Interactive online store:
http://www.gtstore.com or call 800/229-2714

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www.wizworks.com/macsoft/

Myth 2

$50, Bungie
800-295-0060
www.bungie.com

Myth 2 is, not surprisingly, the sequel to _Myth_, last year's revolutionary title that enraptured the bloodthirsty masses with beautiful 3D landscapes, an incomparable depth of strategy, and sheer quantities of gore left in the wake of sprawling battles. *Myth 2* fixes numerous annoying traits of its predecessor and adds a new single-player campaign, more units, more network maps, more network game types, some game play enhancements, some interface enhancements, and more-detailed graphics. (Look! There goes a kidney!)

Myth 2 is a highly gruesome game that some will find hilarious and others, horrid and disgusting. Troops are shot, fireballed, slashed, kicked to death, and blown to smithereens. Guts fly everywhere on realistic trajectories. When a game is finished, you can tell where the major battles took place by how many body parts are lying about and the amount of blood staining the ground. If, however, this offends you or makes you queasy, you can now lock out the blood. This feature is password protected in case you don't want your kids (or your parents) to be exposed to all the gore.

Myth 2 is a game of mythical battlefield tactics. Each player starts out with some units of soldiers, and the goal is to fulfill your mission objectives while losing as few men as possible. With the single-player mode, the mission objectives vary wildly, from simply surviving to assassinating an enemy baron. All the missions can be played at various difficulty levels, from timid to legendary. All this action takes place in a completely 3D world filled with castles, buildings, windmills, hills, lakes, rivers, trees, bushes, grass, and just about everything else you would expect to exist in a medieval world. It's even got chickens! It would offer many a Kodak moment if only the battlefield didn't get covered in blood in a matter of minutes, or even seconds.

You can view these wondrous and luscious landscapes are through a camera that can pan, rotate, zoom in, and zoom out to get you the best vantage point for controlling your troops. This freedom of viewpoint is especially important when your troops are traversing hills, wading through streams, or hiding behind buildings. The creative gamers among us will enjoy the aptly named map and game editors, Fear and Loathing. With these tools, you can create your own ghastly *Myth 2* levels to enjoy with your friends.

My newest passion is playing *Myth 2* online at bungie.net. If you think annihilating hoards of undead is fun played against a computer, just wait until you take on real people. When you first start, you'll get completely obliterated, but massive free-for-all games are so strategic, you won't be able to leave. The real fun begins once you can avoid being utterly demolished. Not much is more satisfying than watching chunks of your human opponents fly across the screen to land in a disgusting heap. Yes! But killing all of your opponents' units is not the only way to win online. There are more than 10 game types, all of which have different winning conditions. You can play Capture the Flag, King of the Hill, Steal the Bacon, and more. Some of the more crazy network games include Hunting (whoever kills the most wildlife wins) and Stampede! (herd all your livestock to your opponent's flag). *Myth 2* online can be played just for fun or you can compete for the title of best player in ranked games. For those who want even more competition, there are plenty of huge tournaments you can join. If you should feel like smashing this lousy reviewer into pulp, my bungie.net login is Chunk MHJ.

Between the fantastic single-player levels, the immersive strategy, the beautiful 3D graphics, and bungie.net, you can get so engrossed in an entirely mythical world that it becomes your only reality. If you don't have a life, *Myth 2* will suffice.

— Paul Boone

We Got Hints Here

Hint 1: When you're playing online, don't be afraid to lose. Play games against the best people you can. The more you suffer at the hands of the highly ranked, the better your chance of beating them someday.

Hint 2: Hit your opponent with ranged units such as archers and dwarves as long as possible before engaging the enemy with "fodder" troops such as footmen.

Hint 3: Do the unexpected. This will most likely result in your making a total fool out of yourself, but you'll learn something and sometimes end up with a gloriously brilliant win.

TimeLapse

$30, Barracuda Software
760-634-6794
www.barracuda-gssm.com

TimeLapse is a puzzle-solving adventure game that puts you on the trail of the missing Professor Nichols, who was last seen on Easter Island. From what you can make out in his journal, it seems that he's discovered a time-travel device, and he thinks he may have stumbled upon a link between four ancient civilizations, but, of course, he's gotten in a bit deep and needs your help.

TimeLapse's four worlds are compelling and richly detailed. The game is perhaps just as difficult as *Riven,* but I found it provided not nearly as addictive an environment. Navigation is rigid and awkward. I often had to turn in odd directions, which didn't jibe with the image on the screen. And for some reason, you always have to click up in the sky in order to move forward.

Overall, the graphics have a flat, unconvincing look. Even though there are many places that are artfully done and look stunningly realistic, the animation of water splashing and trees swaying becomes repetitive and predictable after walking around for a bit.

The game has two minor but very annoying technical problems. *TimeLapse* consistently turned my system volume all the way up and left it there after I quit. And whenever you return to a saved game, you have to start from disc one, bypass the lengthy introduction by pressing Command-Q, and then choose Open Saved Game from the beginning of a new game before you can continue with any other disc.

Although many of the puzzles are interesting and engaging, they are sometimes unnecessarily difficult and monotonous. I'm thinking of one in particular that I later found out was not even necessary to finish the game. Another kind of puzzle I found extremely "un-fun" was a battle with a dangerous beast. Essentially, you're trapped, and the beast, with its mechanistic movements and sounds, sways back and forth and growling. Hacking wantonly with a spear, I spent a good 15 minutes until I was finally able to subdue the creature, but the task lacked both the mindful thrill of a good *Riven* puzzle and the adrenaline rush of a good arcade game.

Although the journey may take you to a lot of fascinating places, for some, it might not be worth the trip.

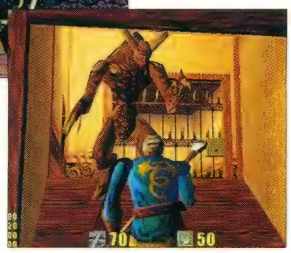
— David Weiss

Dark Vengeance

$39, MacSoft
800-229-2714
www.wizworks.com/macsoft
PowerPC Required

Mac gamers have been following the progress of this first-person action game for a few years, and, at last, we have a finished product on our hands. If you're running a G3 with Voodoo 2 or the new ATI Rage 128, throw the magazine to the floor, hop in the car (grab your parents, if necessary) and get to your local CompUSA's Mac-store-within-a-store. If, on the other hand, you are running a non-G3 with no hardware acceleration (the Rage II doesn't count here, folks), you might want to hold off on *Dark Vengeance* for a little while, despite its reasonable tag.

The game's premise will be familiar to most gamers: You play a character who must wind his or her way through an extensive labyrinth of levels. Like the blockbuster *Unreal,* MacSoft's recent first-person 3D shooter, *Dark Vengeance* has an incredible plot (ass-kicking, spell-casting, evil-licking) that gives seasoned players some incentive to play what may at first seem to be just another first-person shooter.



But where *Dark Vengeance* really shines is in its technology. Although the game's requirements call for at least a 180MHz PowerPC 603 processor, our testing found that level of power to be almost unbearable when playing a game like this. If you plan to play on a slower system, make sure you have either a Voodoo card or the new ATI Rage 128. Anything less makes the game virtually unenjoyable. The game performed reasonably well on older G3 machines across the board with their standard Rage Pro 3D configuration, although you will notice that the machine is working overtime to churn out the graphics.

This comment about hardware intensity requirements is not to fault the developer, by any means. This is actually a case of a game being released slightly before the optimal hardware is in most homes. That said, *Dark Vengeance* is the jewel in the rough of first-person shooters. The game is beautiful, the game play is astoundingly well executed, and the story is thoroughly developed. If your computer can handle it (and I mean *really* handle it), get it. If not, you might want to upgrade first.

— Rafi Guroian

Virtual Game Station

$50, Connectix
800-950-5880
www.virtualgamestation.com
Factory-original G3 Required (will not work with upgrade cards)

The cry for more games for the Mac has just been answered — not by MacSoft and not by Bungie, but by Connectix and a smart little piece of software called the Virtual Game Station. VGS is a PlayStation emulator, meaning that once installed and loaded, it essentially makes your Mac run like Sony's popular game console.

So what's in it for me, you ask. Well, have you ever seen your PlayStation-owning compatriots stumble into work in the morning complaining about how they were up all night playing *Metal Gear Solid* or *Gran Turismo*, and felt sick with envy? Now G3 owners can join the ranks of the bleary-eyed caffeine addicts, as VGS enables hundreds of PlayStation-compatible games to run on your Mac.

What's more impressive, though, is the fact that most of these games translate to the computer screen almost perfectly. Titles such as *Spyro the Dragon, Life*, and *Klonoa* all run almost as well on a G3 as they do on a PlayStation — and they certainly run better than they would on most PlayStation emulators available for the PC.

These PlayStation games look almost this good on Mac with Virtual Game Station

Another bonus is that the software is so easy to install that your house pet could manage the task. When you insert the VGS disc, all you have to do is follow the three clearly labeled steps. Then to play a game, you merely launch the program and insert a PlayStation disc into your CD-ROM drive.

But as with any good thing, there are negatives, and while not overwhelming, they are something to consider. The biggest problem is the frame rate. If your Mac doesn't have a good video card, frames are sometimes dropped. Even on an iMac, where the Virtual Game Station seems to operate at its best, the frame rate is occasionally off, resulting in jerky game play. On top of that, there is some noticeable skipping in some of the full-motion video sequences.

From top: *Crash, Klonoa, Resident Evil, Metal Gear*, and the ever-so-cute *Spyro*

People always claim that bigger is better, but in this case, that statement doesn't exactly hold true. If your G3 is hooked up to a larger monitor, the game may not appear correctly on your screen. For instance, on my 20-inch monitor, the picture was not centered and ran off the screen in some games.

Just because Virtual Game Station can emulate the PlayStation doesn't guarantee that your G3 will run all PlayStation games, either. VGS is not compatible with certain titles nor does it work with imported games — a problem that should only exist for diehard players who feel the need to get their hands on games at the earliest possible moment.

Already, more than a hundred games have been proclaimed playable on the Virtual Game Station by Connectix and its team of testers. A list of those titles is available on the product Website and is actually quite comprehensive, including such noteworthy PlayStation games as *Bushido Blade, Castlevania*, the *Crash Bandicoot* trilogy, *Final Fantasy VII, Gran Turismo, Metal Gear, GameDay 98, Spyro the Dragon*, and *Tekken*.

Of course, all this gaming luxury doesn't come cheap: You need a G3 machine, the actual emulator, and some PlayStation games (though these can be rented at video stores), and to be truly content, you really need either a joystick or a gamepad. While you can play these games using the keyboard, you probably won't enjoy the experience if you're playing any sort of action, adventure, or fighting game, where simultaneous button-mashing is of the utmost importance. However, if you already own some of this equipment and you're willing to sift through the bargain game bins at Electronics Boutique, VGS is a great investment.

The overriding beauty of something like the Virtual Game Station is that Mac owners can reap the rewards of Sony's total and complete dominance of the game market. After all, there is now a PlayStation in one out of every eight homes in America, which means that practically every developer and his mother are currently working on PlayStation games. And now it means more games for the Mac — and that's never a bad thing.

— Cathy Lu

Tarot Magic

$70, Visionary Networks, Inc.
www.iching.com
800-471-8313

If you've ever sat down with a deck of Tarot cards and a book and attempted to do a reading, you know that learning how to interpret the cards properly takes a great deal of time and patience. If you were frustrated, nay, thwarted in your efforts, but you're interested in getting a quick fix of divination, *Tarot Magic* may be for you. There are no complex card configurations to learn. The "game" takes you through a path, to a castle, complete with the sound of a galloping, whinnying horse. You navigate through the castle to a table, which holds a sheet of parchment paper and a deck of cards. From there you type in your question, shuffle the cards, and the future is now.

The New Age music kicks in and three cards are dealt: The first represents the situation at hand. The second offers advice on how to deal with that situation, and the third proffers you a look into the near future. A soothing voice-over reads the first section of the interpretation; the others, which give you deeper insight into the card, are text-only. Traditional Tarot requires a reading of the cards and then analysis of the formation to reveal more about the situation. With *Tarot Magic* the procedure is an easy three-step process.

Navigating the interface is easy, not requiring even a cursory glance at the manual. Loading the software was a little glitchy, however. I had to install it twice to make it run properly, though after that, there were no other problems.

At first crack the advice seemed a little vanilla for my tastes, a bland blend of Dr. Joyce Brothers and Deepak Chopra, but later divinations revealed the dark side of the deck, and the cards had some pretty serious things to say. Readings can be saved to a journal or printed out in their entirety.

A professional Tarot reader might find *Tarot Magic* to be a little simplistic, but for the Tarot dilettante looking for an easy in, the software is probably a good fit.

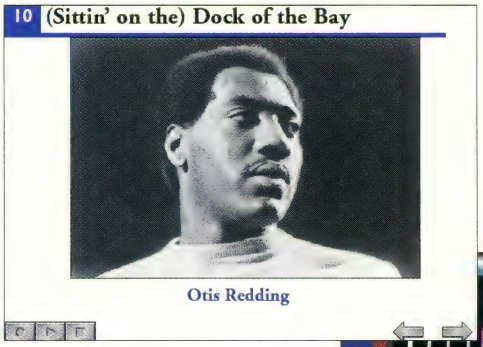
— Anne Marie Feld

Guitar Songs Vol. 1

$30, eMedia
206-329-5657
www.emedia.org

For those of you who cringed during the kissing scene in *Reality Bites*, where Winona Ryder kissed Ben Stiller in his convertible Saab to the plaintive strains of Peter Frampton's "Ooh Baby I Love Your Ways," read no further. For the rest of you, the group that didn't quite understand why Winona chose grungy, unemployed Ethan Hawke as her soul mate, if you play guitar, this software's for you.

eMedia's *Guitar Songs* takes you through a jukebox of '60s and '70s FM radio fare, instructing you on how to play songs by Eric Clapton, Heart, Willie Nelson, Elvis, Santana, Bonnie Raitt, Tito Puente, and more — quite enough to fill a K-Tel music collection. If you're into that fare, you'll love this software. Ease of use is putting it mildly — the software walks you through a tutorial that teaches you how to navigate the interface; instructs you on recording your music using the Mac's microphone; and teaches you the basics of rythmic notation, note values, how to read chord charts, and tuning (the program has an oh-so-easy-to-use autotuner, which plays out the notes for you to tune against). It gives you the basics of everything you need to use the program and then dumps you out into the Jukebox, where you can choose, by genre, the song you want to play. You can elect to read biographical sketches about the artist, or jump right into the song, which is laid out like a piece of sheet music, with easy-to-read lyrics.



Probably the coolest thing about this software is its guitar track. Click on the sound icon in the top left of the screen, and an animated guitar fretboard appears at the bottom of your screen, showing you finger placements for chords as the song plays out. A drum track is also available to accompany you once you've got the guitar part down (*love to hear percussion*). The software was designed to be used by anyone from beginners, playing five-chord wonder songs like "Sittin' on the Dock of the Bay," to advanced guitarists, walking you through the guitar solo on "Oye Como Va."

All told this is a well designed, easy-to-use multimedia songbook. For fans of this musical genre, this is a great piece of software.

— Anne Marie Feld

By Chris McVeigh

The Basics, Part I

Know Your Macintosh Inside and Out

Since buying your new computer, you've likely become quite familiar with what you see on the screen. However, there's a whole world of technology working silently behind the scenes.

Processor

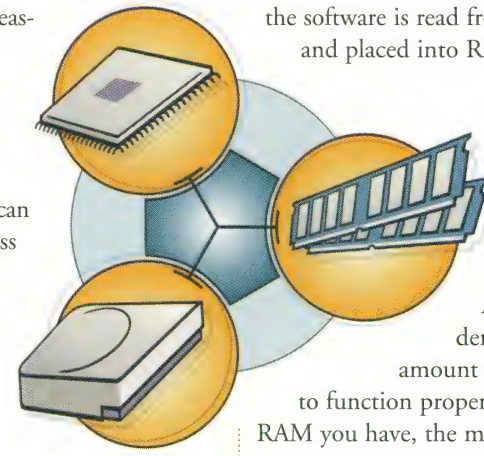
The processor takes in data from several sources, processes it as required, and shuttles it off to different system components for further processing, storage, or display.

The more instructions a processor can handle in a given time frame, the faster its performance. While a computer's clock speed indicates how fast the processor operates internally, it does not accurately reveal the overall system performance. Modern Macintoshes rely heavily on two other variables to make data available to the processor more quickly, thereby making them run more efficiently: level 2 cache and bus speeds.

Level 2 Cache

The word "cache" is derived from the French verb "cacher," meaning "to hide." In English, the word has come to mean a small hiding place for storing provisions. Fittingly, a computer's cache stores frequently used data in a place where it can be quickly accessed by the processor. All processors have a small amount of cache built in. The PowerPC G3 processor, for example, has 64K of level 1 cache.

Level 2 cache is external to the processor. In previous Power Macs, the level 2 cache was situated on the logic board. In newer systems, however, the level 2 cache is located on the processor daughtercard. Its close proximity to the processor enables faster communication, thereby increasing system performance (see "Bus Speed," below). As a rule, the larger the level 2 cache, the more data that can be stored and the less the processor has to communicate with slower components, such as RAM and the hard drive.



Bus Speed

The bus speed refers to the speed at which the computer's components speak to each other. The system bus is the speed at which data is shuttled around the logic board — say, from the processor to the video subsystem. The system bus is 66MHz in iMacs and 100MHz in the new Power Macintosh G3s.

The backside cache bus is the speed at which the G3 processor communicates with the nearby level 2 cache. In most systems, the backside cache bus speed is half that of the processor. Some high-end Power Macintosh G3s squeeze out extra performance by running the backside cache bus at the same speed as the processor, a 1:1 ratio.

RAM

RAM, or Random Access Memory, is where the computer stores data it is actively working with. While accessing data from RAM isn't as fast as accessing data from the level 2 cache, it is much faster than reading it from the hard drive. When you launch an application, the software is read from the hard drive and placed into RAM. As you work with the application, data is *continually* being shuffled between RAM and the processor. Applications demand a specific amount of RAM in order to function properly. The more RAM you have, the more applications you can open at once.

Hard Drive

The hard drive is remarkably similar in concept to an old record player. Inside the small metal casing are a disk that spins and an arm that reads the data from the disk. To write data, the arm changes the magnetic polarity of a tiny portion of the disk to reflect binary data — either a zero or a one. The magnetic polarity remains unchanged in the absence of power, allowing you to shut down the computer without worrying that your files will be lost.

Around the Corner

Next month: PCI expansion slots, video RAM, and ROM. Stay tuned.

CHRIS MCVEIGH

Does your calculus class demand electronic countermeasures?

With *Calculus WIZ*™, the raw force of *Mathematica*® has been tapped to help you blow away your calculus homework. *Calculus WIZ* features ingenious interactive tutorials and the power to defeat the most diabolical calculus problems without breaking a sweat. To uncover more about *Calculus WIZ*, just infiltrate your local bookstore, or visit our web site **www.wizpower.com**.

WOLFRAM MEDIA

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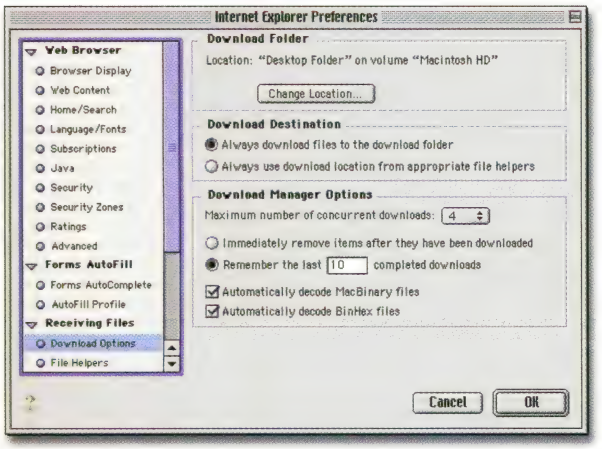
* Price in U.S. dollars.

By Chris McVeigh

Minimize Downloading Messes

Netscape Navigator and Internet Explorer have the bad habit of tossing all downloaded files onto your desktop. Once a file is downloaded, StuffIt Expander kicks in and decompresses the file. Unfortunately, it usually leaves the original compressed file just sitting there — and in some cases, it creates a third, interim file as it expands. This can create a huge mess on your desktop. Thankfully, there are two ways you can control the mess. First, you can make a Downloads folder. Find a convenient place to access your downloads and then create a folder in that location. The Apple Menu Items folder and the desktop are both good destinations. Name the folder something easily recognizeable, such as Downloads, and then launch your Web browser.



Netscape Navigator users should select Preferences from the Edit menu. In the list of options, you'll find a Navigator heading. The second option listed below it should be Applications. (If the blue caret is pointing at the word Navigator, click on it to reveal the list of options.) Click on Applications. A new set of options will appear to the right. Near the bottom of the screen, you'll see the text, "Download files to." To the far right, there will be a button marked Choose. Click on the Choose button and seek out the folder you just created. All downloads will now be directed to that folder.

Internet Explorer users should select Preferences from the Edit menu. In the list to the right, you'll find Downloading Options. Clicking on this will reveal a new set of options to the right. At the top, you'll see a box titled Download Folder. Click on the Change Location button and select the folder you recently created. All downloads will now be directed to that folder.

Redirecting all downloaded files is a first step. The second thing you'll want to do is get rid of the archived files once StuffIt Expander has finished decompressing them. Find StuffIt Expander on your hard drive and launch it. (Use Sherlock or Find File to locate StuffIt Expander if you need to.) Select Preferences from the File menu. In the window that appears, you'll notice several options listed at the right. The second item listed is Expand Archives. Immediately below it you should see an unchecked option to Delete after expanding. Check this item and click OK at the base of the window.

From this point on, all files will be downloaded to the folder you have specified. StuffIt Expander will then delete all compressed archives once they have been expanded, and you'll have saved yourself a huge mess — and some valuable hard drive space.

Stuff the Control Strip

One of the most tedious aspects of the original Control Strip was the need to restart your Macintosh in order to activate new modules. Control Strip 2.0, shipping as part of Mac OS 8.5, drastically changes this procedure. You can now add modules to the Control Strip simply by dragging and dropping the module file onto the strip. In an instant, the module is loaded and ready for use. To rearrange the order of the modules in the strip, hold down the Option key, click on a module, and drag it where you like. You can also remove any module by holding down the Option key, clicking on the module, dragging it off the Control Strip, and dropping the file anywhere you like. (Release the Option key before you drop the file, or you will simply make a copy of the module.) The Finder treats the dragged module like any other file, too, so you'll be able to open a folder simply by holding the icon on top of it. And if you should decide that a module is not quite what you want, simply drag it to the Trash.

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Mac OS 8.5's Tear-off Applications Menu

One of the most useful additions to Mac OS 8.5 is the tear-off applications menu. By simply scrolling down to just beneath the bottom of the applications menu, you can tear it off and place it where you like. To switch applications you simply click on the application name. You can even open documents by dragging and dropping the file onto the application of your choice.

Of course, the more applications you open, the greater the size of the floating applications palette. Thankfully, you can collapse the palette to small icons by clicking on the resize button, thus eliminating the text. (Holding the shift key as you click the resize button results in a half-size palette with abbreviated text.) You can also switch to larger Finder icons by holding down the Option key as you click the resize button. Finally, by holding Shift-Option as you click the resize button, you can change the orientation of the application palette. Instead of reading vertically, the application palette now reads horizontally.

Working Button Bars

The ClarisWorks/AppleWorks 5 button bar provides quick, one-click access to any number of time-saving features. However, it's easy to customize the button bar to fit your individual working style and needs.

Move the button bar by pointing your cursor at two raised ridges along the left edge. You can reposition the bar horizontally along the bottom of the screen, vertically on either the left or right edge of the screen, or as the free-floating palette you might remember from previous incarnations of ClarisWorks.

You can change the position of any button by holding down the Command and Option keys while you click and drag the button to a new position. Or drag the button off the bar to delete it altogether. Don't worry if you make a mistake; you can always get it back.

If you've switched between document types — say word processing and spreadsheet — you probably noticed that the buttons changed to reflect the different functions available. You also have access to specialized bars for Internet, Assistant, and Document. Plus you can add or remove buttons to customize any of the standard bars or create your own.

Click on the first button to the left or top with the downward-pointing arrow to choose an alternate bar or to customize or create your own buttons and bars. Adding your own buttons gives you one-click access to macros or specific documents. Just select the New Button … option and make the appropriate selections in the resulting dialog box.

You can add functions that are only available via buttons: the Speak Text function, for example. As you create new bars or edit existing ones, keep in mind that buttons are grouped according to the document types they modify. If you add a function that's specific to spreadsheets, you won't see it when you work in word processing.

share your tips!

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back to basics [You Ask, We Answer]

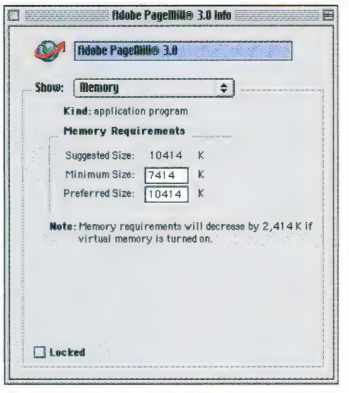
By Chris McVeigh

Memory Problems, iMac Modeming, PC to Mac Transfers

Q I just bought a Power Mac G3 and have been very pleased with it. But one thing has been bugging me about it. When I try to allocate memory to programs, I go into the File menu and select Get Info. However, there are no boxes allowing me to specify memory allocation. I bought a Mac book that tells me I should be able to do this, but the presented window isn't showing me anything of that nature — just the comments box. I'm perplexed.

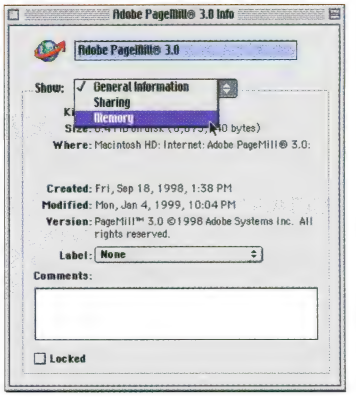
Matthew Lee

A Since you say you've just bought a new G3, I must assume that it shipped with Mac OS 8.5 preinstalled, and that's the culprit. Unlike previous versions of the operating system, Mac OS 8.5 subdivides the Get Info window into three sections — General Info, Sharing, and Memory. These sections are accessible through a new menu under the file name. The default menu option is General Info, and that's what you see each time you open a Get Info window. To change the memory allocation of an application, you'll need to select Memory from the menu. The familiar memory boxes will then appear.



Q I've had an iMac since September. Occasionally the arrow freezes, and the computer can no longer be used. My son says I'll ruin the computer by turning off the power to get the thing going again, but the iMac book I read says, as a last resort, to do just that. What is your opinion and what am I doing wrong to cause the problem?

Jeane Mari Jones



A There is really nothing you can do to prevent your iMac from occasional crashes. As long as the crashes or system freezes aren't happening at an alarming rate, rest easy. All computers experience some crashing, usually when one piece of software clashes with another in unusual and often obscure circumstances.

On most Macs, you can recover from a crash simply by pressing Control-Command-Reset on the keyboard. However, the original iMac introduced a new connection system for the keyboard and mouse, which did not support this key combination in system crash situations. Unfortunately, the hard reset button on the original iMac is located in the port drawer — inside a tiny hole marked with a triangle.

To reset your iMac, you'll need to find a paper clip; unfold it and insert it into the hole to press the reset button. This is a tedious task that has led many iMac owners to simply unplug the iMac when a crash occurs. Unplugging the iMac isn't always the safest thing to do, however. A sudden loss of power can cause problems with sensitive components such as the hard drive. To keep this kind of trouble at bay, always reset your iMac with the reset button. Just be sure to keep a paper clip handy!

Q I have an iMac and I am not sure I am getting the fastest Internet connection speed possible for my equipment. I verified in my Modem Control Panel that the modem specified is an iMac Internal 56K. Then I went to my Remote Access Control Panel to monitor the connection speed displayed in the Status box. My connection speed is consistently 28,800bps. My ISP is EarthLink, which tells me it is capable of handling 56Kbps. My local phone company tells me the phone lines are capable of handling 56K. Why is 28,800bps the best my iMac will do?

Daniel V.

A There are several things that determine how fast you can connect to your Internet Service Provider. The first is the speed of both your modem and the modem receiving your call. You know that your iMac modem is 56K, and EarthLink is assuring you that its modems are 56K, too.

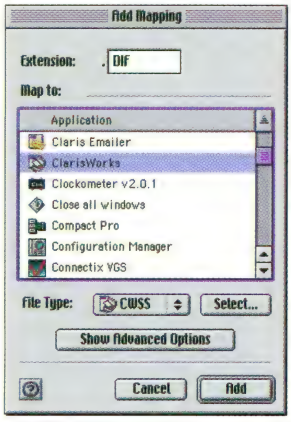
The second criterion is the connection standard supported by both your modem and the modems receiving your call. There are actually three different 56K standards — two interim standards from competing companies (x2 and K56Flex) and a third, final standard that emerged last year, called v.90. A big problem is that these standards do not cooperate very well. Your iMac's modem likely shipped with v.90, and I suspect EarthLink's modems have been upgraded to handle the new standard. However, Apple has released a revision to the iMac modem firmware. It's available on Apple's Website. Install it and your connection rate may improve.

The final concern is the caliber of your local telephone lines. Although your telephone company assures you it can handle 56K connections, the physical lines between your home and the telephone company may be picking up a lot of noise, forcing your modem to connect at a lower rate of 28.8K. The quality of the phone lines plays a crucial role in connection speeds — for example, I connect at a maximum of 44K here at the office. However, at a friend's house, my connection speed is 48K. You may want to test your iMac at a friend's house to see if it makes a difference.

Q I recently bought an iMac — a significant upgrade from my old 486 PC. I have to convert as much of my data as possible to Mac format. The problem I have encountered is that File Exchange [part of Mac OS 8.5] misinterprets the file, and I cannot read it from the intended application. For example, if I export my spreadsheet as a .DIF file, the File Exchange interprets it as a QuickTime file. How can I fix this so that .DIF files open with ClarisWorks?

Terry J. Wong

A The easiest way to correct these problems is by adding file translation preferences in the File Exchange control panel. Launch File Exchange and click on the File Translation tab. You'll see a list of file translation preferences in the lower half of the window. If you scroll down, you'll see that all unspecified DOS documents are programmed to open with MoviePlayer — that's why the Mac thought your spreadsheet file was a QuickTime file. While this might seem bizarre, Apple preprogrammed File Exchange like this because the majority of files being shared between PCs and Macs are multimedia files. Apple was hedging its bets that an unrecognized file would be an image, sound, or movie file, and because QuickTime and MoviePlayer can read almost all multimedia file types, it's a good catch-all.



Click on the PC Exchange tab. This part of the control panel allows you to specify which application you'd prefer to use to open certain PC files, based upon the file's three-character extension (such as .DIF). Click on the Add button. A window will appear, and at the top, you'll see a box marked Extension. Enter "DIF" into that box, then select ClarisWorks from the list of applications below. You can also specify the type of ClarisWorks file (e.g., a spreadsheet — CWSS) from the File Type menu. Once you've configured these preferences, click the Add button. From now on, all .DIF files will be recognized as ClarisWorks spreadsheet files. MH

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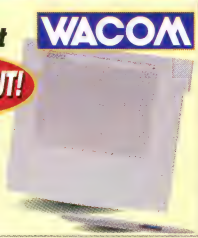

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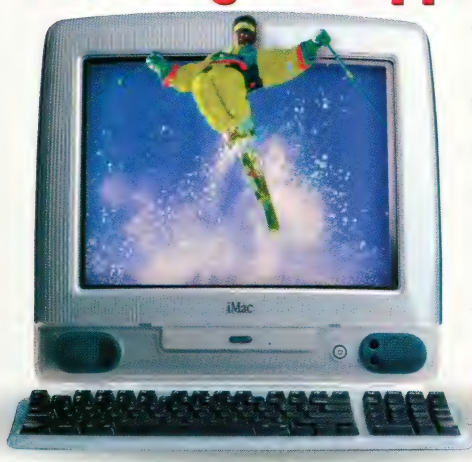

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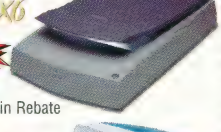

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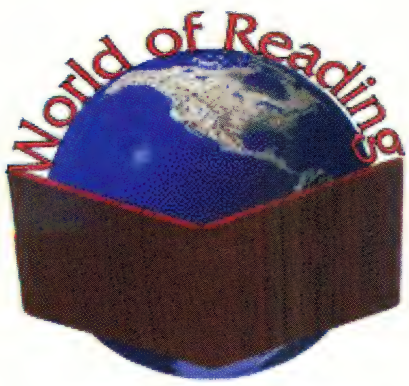

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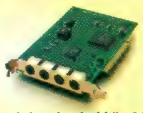

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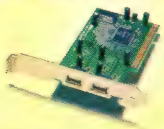

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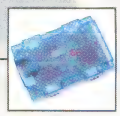

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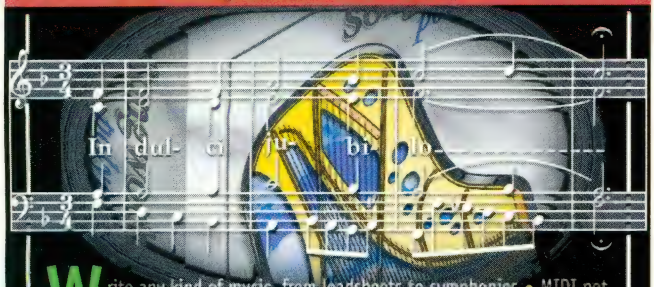

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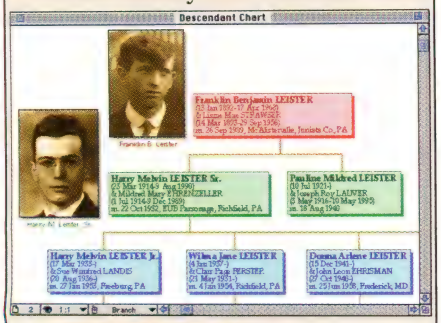

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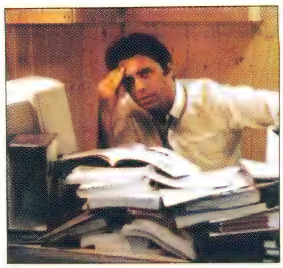

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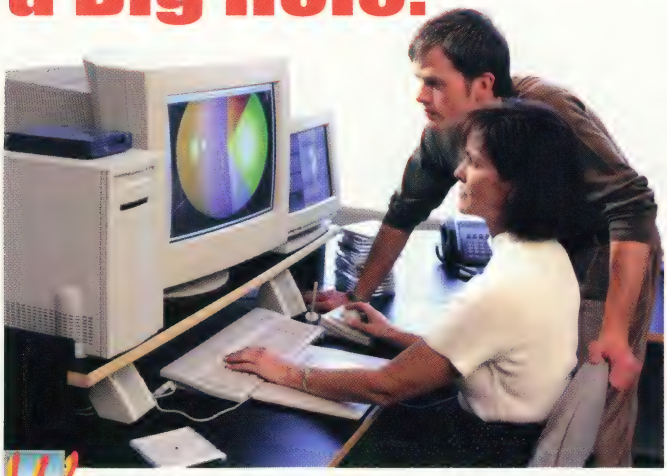

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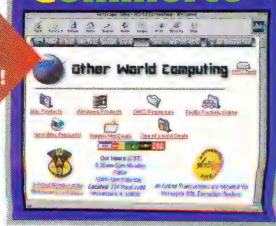

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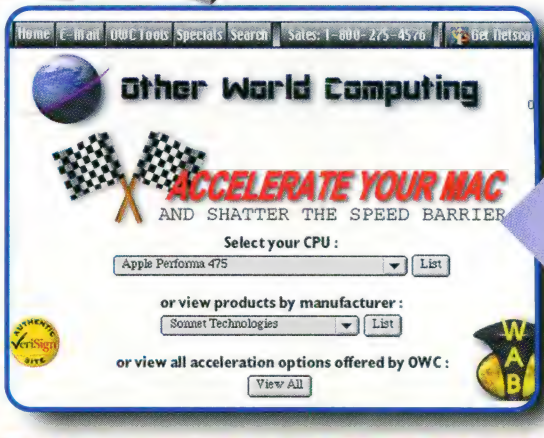

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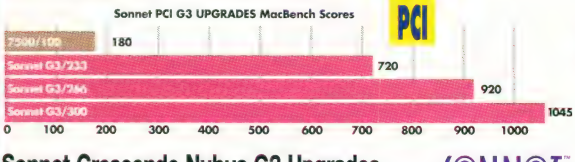

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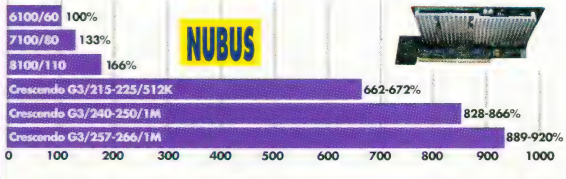

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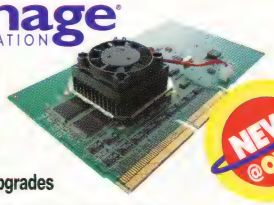

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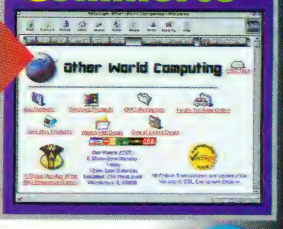

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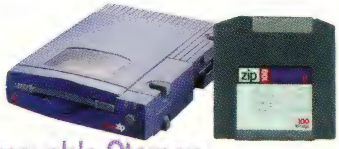

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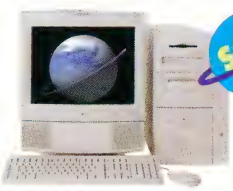

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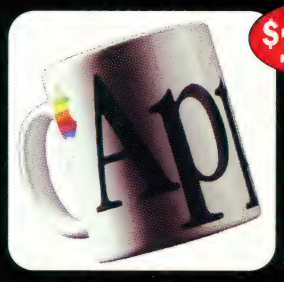

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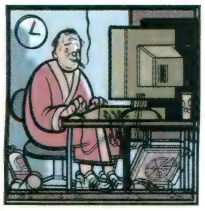

the Finder [Commentary]

By John Poultney

Anarchy in the OS

Practical Jokes and the Mac

What could be more fun than haranguing a coworker such that he *runs from the workplace in tears*? Not much. So in time for April Fools' Day, we remind you that practical jokes and the Mac OS were made for each other. No, really. And you don't even have to use extra software.

Think about it. It's pretty difficult to do anything that will permanently harm a Mac, and yet it's quite easy to get into the innards of their systems for skulldug-geriffic tomfoolery. And hey, all you need is already in the operating system.

But please, play nice. Don't make people miss deadlines. Other than that, the way we see it, anything goes. Let's begin.

Startup Items: Joker's Best Friend

Anything — *Anything* you put in the "Startup Items" folder, found in the System Folder, will launch when the Mac starts. QuickTime movies, applications, sounds, Web pages, what-have you. Here are a few suggestions:

• Find a Web page that would be *inappropriate in polite company*, save it as an HTML file and put it in the Startup Items folder. Your victim's browser will launch at startup and load that page, even if he's not connected. Especially effective in large, close workgroups.

• Put in a recording of the jokee's phone ringing; set at the same volume as the real phone, if possible. *What the …?*

• Make aliases of all applications. That's right, all of 'em. Utilities, too. Maybe a few dozen documents of various kinds. Whatever you find on their hard disk. Slap 'em in the Startup Items folder; the Mac will launch 'em until it runs out of memory. *Nyah ha haaaa!*

• Mac OS 7.6 and earlier has a tiny "Shut Down" program, located in the "Apple Menu Items" folder. Put it in the Startup Items folder and watch the anguish. *Noooooooooooooooo! Why???*

Those last two are pretty diabolical, by the way. Have a System CD-ROM standing by; starting the computer with the "C" key held down boots from the CD-ROM drive. Oh, and the latest OSs don't include "Shut Down" as a separate program, but you can download a shareware one, and a Restart program, from www.machacks.com/machackfiles/k-rad-controls.sit.hqx.

Make It Stop!

Substitute a very long *silent* sound file for the alert beep (use the Monitors and Sound control panel) and your jokee will think his or her computer has crashed for no reason, because nothing else will happen while the sound's playing. Save 60 seconds silence with SoundRecorder (from http://dgrwww.epfl.ch/~jenny.) or use the Sound control panel (limited to 10 seconds). Put the file in the Startup Items folder (use a blank icon so it's hard to find), or use it (or perhaps the sound of the phone ringing) as the alert noise.

If your office has a "shared" computer, get a strident, car-alarm type sound, change its icon to a folder (using the Get Info command, select a folder's icon in the upper left corner, then copy-paste it to replace the sound's icon, also using Get Info). Now give it an enticing name like as "Salary Increase Plan" or "Dirty Pictures." Pump up the volume. When someone tries to sneak a peak, as they will — *boy, will their face be red.*

You can always relabel items, such as switching "Microsoft Excel" to "SimpleText preferences" by single-clicking on the name, waiting a couple of seconds till it highlights, and then typing whatever you like. Be sure to switch the icons too, using Get Info.

Use the Keyboard control panel to change the keyboard layout to a language other than the victim's own. Switch it to German from English, for example, and the y and z keys will be reversed, and the apostrophe key will make an "ä." *Ach du Lieber!*

Or use the Views control panel (use the Appearance/Fonts one in OS 8.5) to change the text under icons and lists to an unintelligible font — Zapf Dingbats or WingDings. *Oh,* ♎☽♍♒▤♋*!!!*

Or take a picture of a normal Mac desktop (Shift-Command-3) and using the resultant picture as the person's desktop pattern (pics are stored on the hard drive as "Picture 1," etc.). In OS 8.5, use the "Place Picture" command under "Desktop" in the "Appearance" control panel; earlier systems use the "Desktop Pictures" control panel. Do it right, and they'll click on icons to *no avail.* MH

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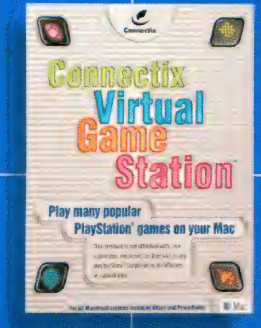
Time to Play!

Play

g a m e s



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TAKE THE HILL. THE EARTH TREMBLING. BLACK WITH BLOOD. HEAVY FOOTSTEPS DISSOLVE INTO A STEADY RHYTHM OF THUNDEROUS BLASTS. MINDS AND LEGS NUMB. GET TO THE HILL. FIERY ARROWS RAINING FROM ABOVE. BLACK WAKES WEAVING A SUFFOCATING BLANKET OF FEAR. MY MEN CHOKING THEIR FINAL BREATHS. JUST MAKE IT TO THE HILL. SCREAMS FROM BEHIND? ARE WE FLANKED? SHADOWS ADVANCING LIKE A DEATH SHROUD. THE HILL. GET TO THE HILL.

6 December
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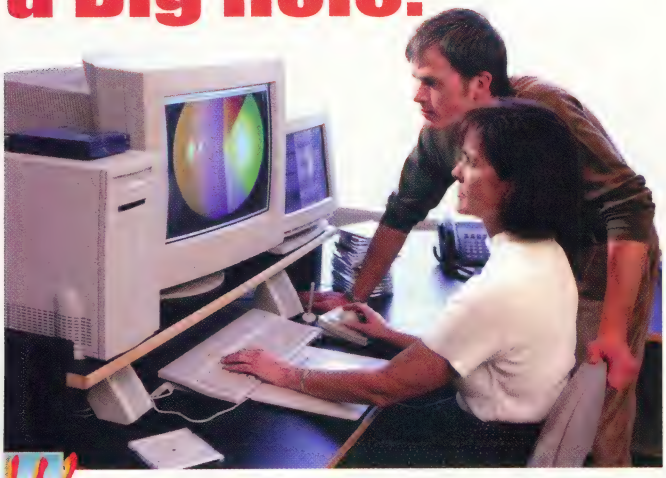

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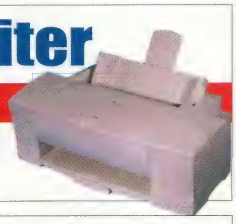

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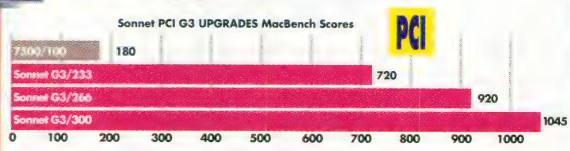

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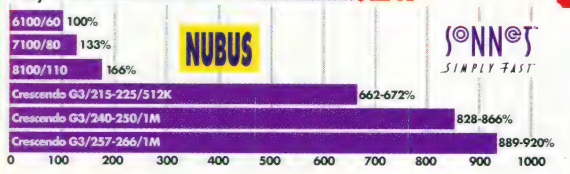

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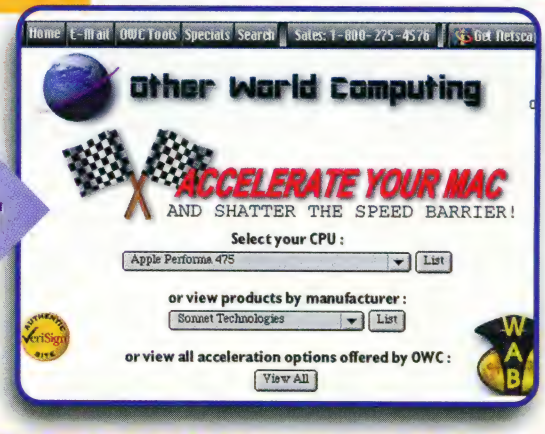

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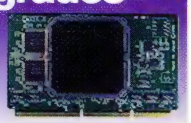

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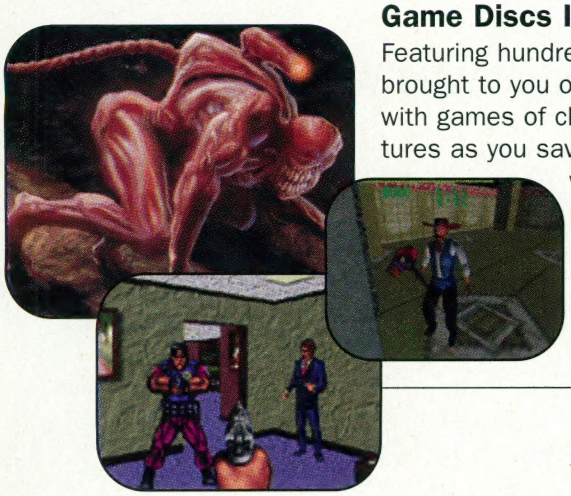

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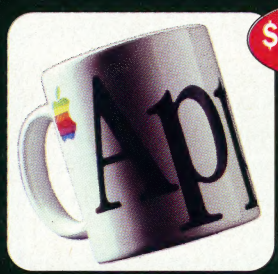

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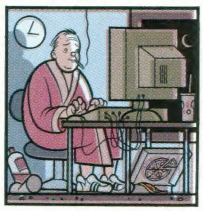

the Finder [Commentary]

By John Poultney

The Company You Keep

I Don't Like Those New Kids You're Hanging Around With

Remember in the old days, how your mom would sometimes disapprove of your friends? She said those kids were trouble, and if you were dumb enough to hang out with them you'd be in trouble too.

Let's apply that situation to Apple and its new friends, shall we? Only in this scenario, "Mom" will be the collective conscience of the Mac faithful. Got me?

"Apple, I don't like those new kids you've been bringing around."

"Aw, Mom!"

"Don't 'Aw, Mom' me, mister. And you know who I'm talking about too — those Microsoft and CompUSA kids!"

"But Mom — they're really popular! Everybody likes 'em, everybody knows 'em. Besides, they're smart and they make lots of money! Don't you want me to be like them?"

"No I don't want you to be like them, Apple. Sure, they're smart, but they're nasty, and they're bullies, too! Always shaking people down for their lunch money, playing favorites like they do. Don't think I don't know about that."

"But Mom, Microsoft gave me a bunch of money and said I didn't have to pay it back, and he'll help me be more popular. Sometimes everybody just laughs and points at me and pushes me down the stairs and Microsoft's always doing something neat with the big kids and he has a customized van and —"

"So *what*? Can't you just be yourself? Money's not everything, dear. If Microsoft jumped off a bridge would you do that too? I mean, what about that court thing, where he wouldn't separate his operating system from the browser, even though that made it unfair to the other browsers? And he made those nice PC makers — Compaq, Dell, even *HP* of all people — bundle that Windows mess with every one of their computers! And he was using all those temps as regular employees but without any benefits. That's not how it should be, Apple! Do you want to end up in court too?"

Money's not everything, dear. If Microsoft jumped off a bridge would you do that too?

"I'm in court all the time, Mom."

"But not because you've done anything like Microsoft did! We all get into a little mischief now and then, honey, and that's OK ... just be yourself. People will notice that you have such a nice personality and make neat things."

"It's not like when *you* were in school, Mom! Microsoft's in every club and he's in with all the teachers and all the jocks and even the principal. You can't just ignore him! Plus I feel like the only ones who like me are the weirdos. The square pegs in the round holes."

"We've had this talk before, Apple. Those are the ones you should want to like you. They're smart too, and they'll go far even if they don't make as much money as Microsoft. Really, honey, I'm just saying this because I care about you. You can hang around with Microsoft a little, when you need to. I know he's not going away. Just don't try to be like him, that's all."

"Don't you like any of my friends?"

"Sure! Lots of them! Like that nice Adobe boy. He pretends he's too 'cool' for you sometimes but he really likes you. I know he hangs out with Microsoft too, but he's just trying to fit in. Same thing with the Macromedia sisters and Avid and InfoWave and Bungie and MacSoft and MetaCreations and Connectix; they're all nice. They all like you, and not because you have money like Microsoft — but because you have personality, honey."

"Well, what about CompUSA?"

"You keep *away* from her! And Office Depot too! CompUSA's not even *trying* with that "store within a store" business. People at those places don't care about Macs; they're forever trying to sell you Windows thingies. And I heard Office Depot has some shady deal where he's supposed to recommend that people buy Brother and Xerox equipment instead of HP, so his managers can win prizes and trips if he sells enough equipment from those companies! And besides —"

"OK, Mom, *OK*. Sheesh." MH

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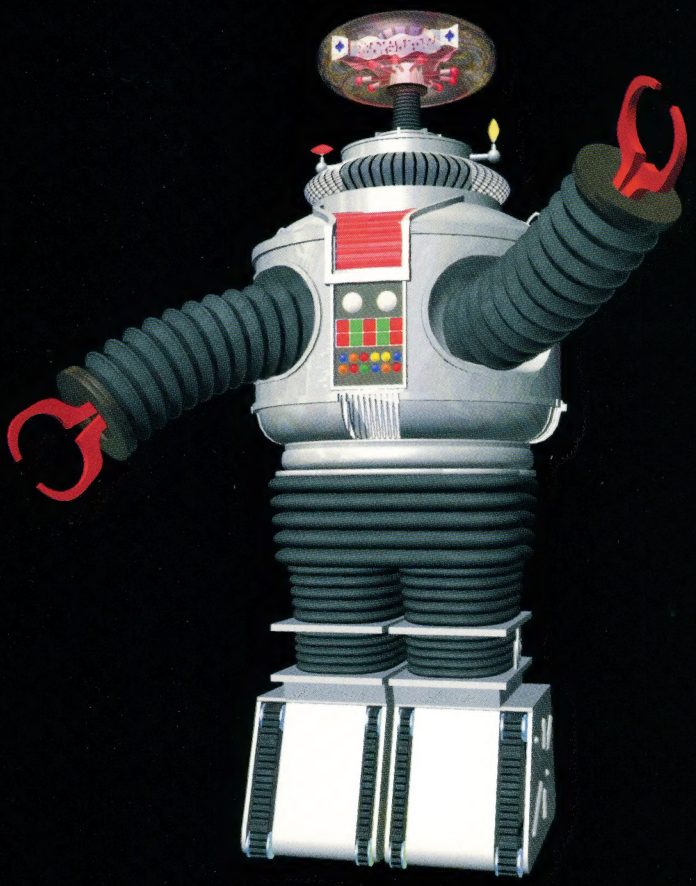

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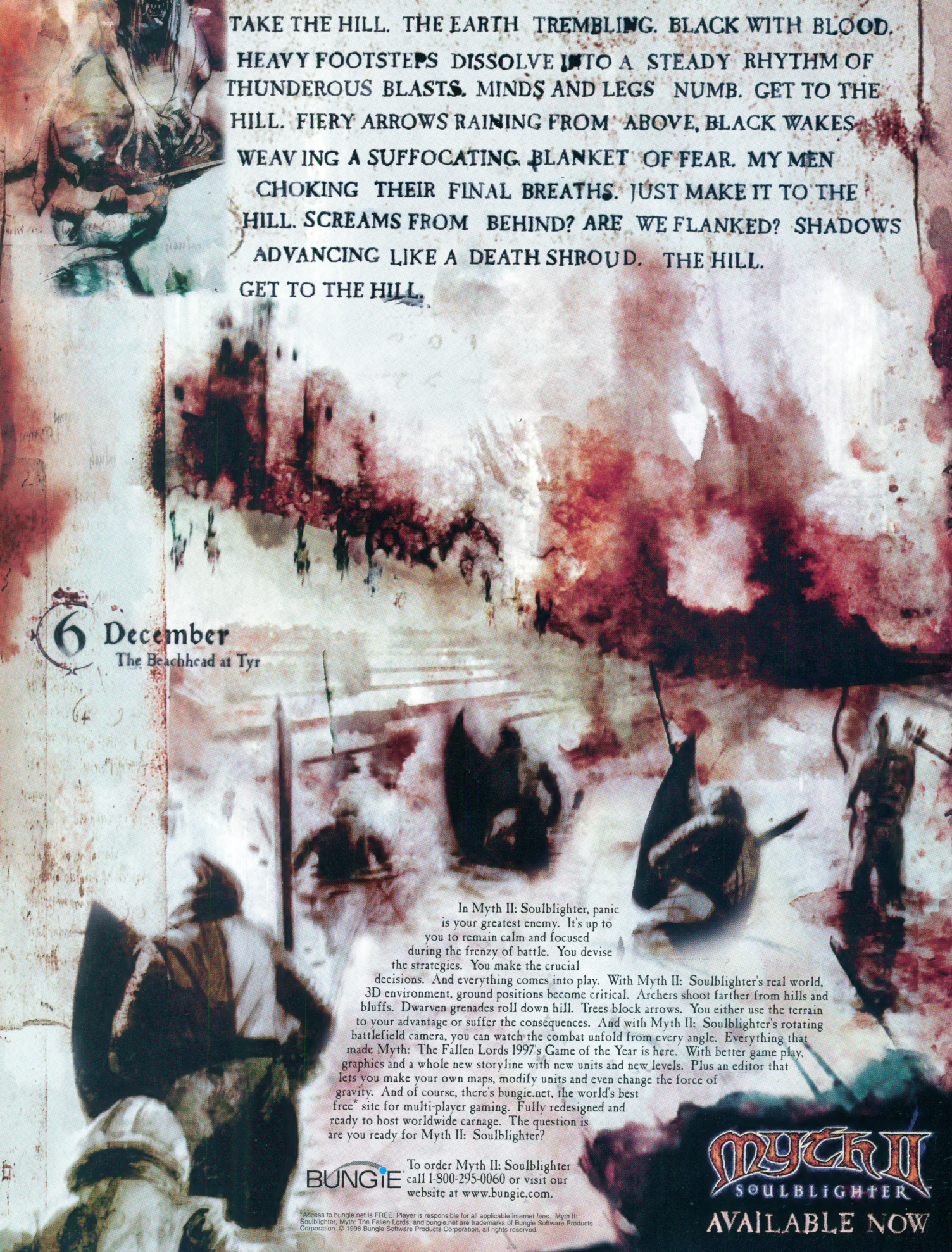
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6 December
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